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HYPOSENSITIZATION TO POISON IVY

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During the past three years specific oleoresins have been administered intramuscularly or orally to some 40 persons who suffered recurrent seasonal dermatitis from contact with one or more allergenic weeds.

Because of unsatisfactory clinical results, intramuscular administration of the excitant was discontinued after one season. The severity of local reactions prevented injection of the antigenic oils except in high dilutions. A study of the case records shows that the maximum amount of oil administered to a single patient during an entire season was equivalent to less than 0.4 cc. of the solvent-free specific oleoresin. If persons were willing to submit to daily multiple injections, clinical results would probably equal those obtained from oral therapy. None of my patients has submitted to even semiweekly injections of the oil for nine to ten months, the period during which oral therapy has usually been administered daily.

Satisfactory clinical results were obtained in approximately 50 per cent of the patients given prolonged oral treatment. Since persons susceptible to weeds usually show a polyvalent sensitivity, unsatisfactory clinical results in many instances were directly attributable to lack of complete cutaneous tests with all environmental weeds and to failure to include all the allergenic oleoresins in the treatment set. In many patients the total dosage was wholly inadequate.

I have unequivocal proof of hyposensitization to weeds in only 4 patients. These persons had suffered recurrent dermatitis for periods ranging from nine to seventeen years without a single seasonal remission. Visits were made to their farms, and cutaneous tests were made with all the dominant weeds in their environments. Quantitative tests were then made with oleoresins of all the allergenic weeds. As oral therapy,

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even with extremely small doses (1 drop daily of a 1:100 dilution), invariably exaggerates an existing dermatitis, treatment was not instituted until the following interseasonal period (January-March) of the regularly recurring seasonal eruption. Oral therapy was usually started in February and continued until the end of the following weed season (December). During this period of nine or ten months all of these persons ingested 3 ounces (90 cc.) or more of a 1:25 dilution of the weed oleoresins to which they were clinically sensitive. None of these patients showed recurrence of the seasonal dermatitis, although their occupations were in no way changed. Visits were made to their respective farms during the height of the weed season, and they were required to pull, handle and walk through the specific allergenic plants. Dermatitis did not follow these proved exposures. After completion of oral therapy, quantitative patch tests with serial dilutions of the specific oleoresins showed that a marked reduction in the level of cutaneous sensitivity had actually occurred.

Persons susceptible to poison ivy usually show a monovalent sensitivity.[1] Since in these persons the criteria for proof of reduced cutaneous sensitivity could be easily controlled during actual clinical exposures, a study of hyposensitization to this plant was undertaken. As the amount of absorption of the poison ivy oleoresin is approximately the same after ingestion and after intramuscular injection of the oleoresin, the former mode of administration of the excitant was chosen.[2]

In a previous communication[3] it was stated that the ingestion of approximately 2 cc. of a stable and potent poison ivy leaf oil is necessary to reduce the cutaneous sensitivity of the average person from the clinical to the subclinical level. The routine procedure was oral administration of 1 ounce (30 cc.) each of the 1:100, the 1:50 and, finally, the 1:25 dilution of the oleoresin in corn oil during a peroid of approximately eight months. The present study was undertaken to determine the reduction in cutaneous sensitivity afforded by the ingestion of 1 ounce of a 1:25 or 1:10 dilution of a leaf or root oleoresin.

Schamberg,[4] in 1919, was the first to popularize the ingestion of a fat solvent–extracted oleoresin in attempted desensitization to poison ivy, a procedure advocated seven years previously by Attix.[5] During the growing season of the plant Schamberg administered from 1 to 60

1. Shelmire, B.: Contact Dermatitis from Weeds: Patch Testing with Their Oleoresins, J. A. M. A. **113**:1085 (Sept. 16) 1939.

2. Shelmire, B.: Nature of the Excitant of Poison Ivy Dermatitis, Arch. Dermat. & Syph. **42**:405 (Sept.) 1940.

3. Shelmire, B.: Cutaneous and Systemic Reactions Observed During Oral Poison Ivy Therapy, J. Allergy **12**:252 (March) 1941.

4. Schamberg, J. F.: Desensitization of Persons Against Poison Ivy, J. A. M. A. **73**:1213 (Oct. 18) 1919.

5. Attix, J. C.: Ivy Poisoning and Its Treatment: Prophylaxis, M. World, July 1912; cited from a reprint furnished by the author.

drops of a solution containing 1 per cent of the tincture of poison ivy in syrup of orange. According to Spain and Cook,[6] extracts prepared in this manner are unstable. Since oleoresins extracted from different batches of poison ivy leaves may vary 1,000 per cent in potency, the solution advocated by Schamberg could have varied from a 1 : 1,000 to a 1 : 10,000 dilution. Also, oleoresins extracted with alcohol are much less potent than those made with ether.[7] The reported failures of Schamberg's method can be attributed to the apparently small amount of oleoresin in the original product and to the rapid deterioration of the solution.

Attempts to reduce sensitivity to poison ivy through percutaneous injection of the extract have met with almost universal failure when reduction in susceptibility to the plant has been gaged by quantitative patch tests.[8] Owing to local reactions I have rarely been able to administer intramuscularly to highly sensitive persons as much as 1 cc. of the 1 : 100 dilution of a potent oleoresin in an inert oil or in diluted alcohol. Presuming that such a dose could be tolerated, it would require about two hundred injections to administer 2 cc. of the oleoresin in this manner. Were commercial extracts employed, advertised strengths of which vary from 1 : 170 to 1 : 3,000, and were maximum doses of 1 cc. injected twice weekly, it would require from three and one-half to sixty years to administer the required amount of oil intramuscularly. In most of the communications relative to the attempted desensitization to poison ivy by the intramuscular administration of the excitant, commercial extracts or preparations equally dilute have been employed. From two to twelve injections have usually been given. Such dosage appears wholly inadequate. Although administered as recommended in the advertising literature (two to four injections), the various commercial extracts have in my hands never endowed the recipient with the slightest reduction in cutaneous sensitivity, as shown by subsequent quantitative patch tests and clinical exposures. Equally unsatisfactory results have followed a similar number of intramuscular injections of extracts of the same strength prepared in my office.

EXPERIMENTAL STUDY

Preparation of the Ivy Extract for Patch Tests.—Leaves from mature specimens of Toxicodendron radicans were collected and thoroughly dried to remove all moisture. The dried leaves were then

6. Spain, W. C., and Cook, R. A.: Dermatitis Venenata: Observations upon the Use of a Modified Extract from Toxicodendron Radicans, J. Immunol. **12**:93, 1927.

7. Shelmire, B.: Unpublished data.

8. Greenberg, S., and Mallozzi, E. D.: Experiments in Poison Ivy Sensitivity: Effects of Specific Injections on the Level of Sensitivity to Quantitative Patch Tests and on Clinical Sensitivity, Arch. Dermat. & Syph. **42**:290 (Aug.) 1940.

triturated, placed in a quart jar and covered with ether. After standing for three days the ether was passed through ordinary filter paper and then allowed to evaporate in an open container. The semisolid, solvent-free, greenish black residue was then heated to 130 F. for twenty minutes to dispel the volatile fraction [7] and to reduce the oleoresin to a fluid state to facilitate accurate mixing. One part of the oleoresin (by volume) was then added to 9 parts of corn oil, making a basic 1:10 dilution. From this 1:10 concentration dilutions of 1:50, 1:100, 1:250, 1:500, 1:1,000, 1:2,500, 1:5,000 and 1:10,000 of the oleoresin in corn oil were then prepared for quantitative cutaneous tests. The different dilutions were placed in standard ½ ounce (15 cc.) dropper bottles. Oleoresins prepared from thoroughly dried poison ivy leaves have now been stored at room temperature for one, two, three, four and five years respectively. Quantitative patch tests show that these oils have lost no demonstrable portion of their former allergenic potency.[7] It is therefore believed that any reduction in reactions to patch tests after oral therapy is due to a lessening in sensitivity of the skin and not a decrease in potency of the testing material.

Method of Making Patch Tests.—Two drops of oil of each testing dilution were placed on the skin, and the sites were immediately covered with a small square of gauze held in place by adhesive tape. The protective coverings were removed after exactly twenty-four hours, and the tested sites were appropriately marked with a moistened indelible pencil. Initial and subsequent tests were made either on the left side of the back in a line parallel to the spinal column or on the two sides of the back simultaneously. Since completely healed areas of skin which have been the sites of single or infrequently repeated poison ivy dermatitis are hypersensitive,[1] this procedure assured the retesting of supersensitive areas after completion of oral therapy. The highest testing dilutions were always placed at the top. Final reading was made on the fourth day. The weakest dilution to which the skin reacted was considered indicative of the "peak sensitivity" of the patient. A person reacting to all dilutions from 1:100 to 1:5,000 would therefore have a peak sensitivity of 5,000 with this specific oleoresin on the specific tested area.

Selection of Subjects.—White persons aged 14 to 45 who gave histories of repeated attacks of dermatitis due to poison ivy were selected. With one exception, cutaneous tests with all dilutions of the oleoresin from 1:100 to 1:10,000 were made on two or more occasions. Only those subjects who gave approximately identical reactions to at least two separate quantitative tests were selected for oral therapy or reserved for controls. Thirty persons fulfilled these requirements. It was presumed that in them the level of cutaneous sensitivity was fixed. Any

appreciable lessening of reactions to patch tests after oral therapy could therefore be attributed to the effects of treatment and not a natural loss of sensitivity by the patient.

Of the aforementioned 30 patients, 20 were given oral therapy while 10 were reserved for controls and were not given specific treatment. Initial patch tests were made on the controls at the beginning of the experiment, and subsequent tests were made four to eight months later. Eight of these persons showed identical reactions on being given the tests again. In 1 the peak sensitivity was reduced by one concentration, while another showed a mildly positive reaction to a higher dilution. The level of cutaneous sensitivity in the control subjects was therefore not materially changed.

Test for Clinical Sensitivity.—In the routine testing of patients with the patch test oleoresin, many who claimed complete immunity to poisoning by the plant consistently showed mildly positive reactions to the 1 : 100 dilution. Some showed slightly positive reactions even to the 1 : 250 dilution. Five of these persons were clinically exposed to poison ivy by having them walk through trailing ivy plants for ten to fifteen minutes, handling the leaves of the shrubby and climbing vines as they walked along. In not a single instance did dermatitis develop in these volunteers. Although I have no proof that sap of the poison ivy plant was actually contacted during these tests, this was the degree of contact spoken of in the case reports as "clinical exposure." A bruised poison ivy leaf was subsequently rubbed over the backs of these 5 persons. Either the contacted sites remained normal or scattered erythematous macules or papules developed.

One of these persons, who regularly gave mildly positive reactions to both the 1 : 100 and the 1 : 250 dilution of this oil, vigorously rubbed a green poison ivy leaf between his palms.[9] He then rubbed his face, neck and arms with his contaminated hands. Although this experiment was repeated on many occasions, dermatitis did not occur. A crushed poison ivy leaf was rubbed over this patient's back at frequent intervals during the ivy season. After such exposures, the contacted sites remained entirely normal or showed only isolated areas of mild erythema. During one field trip he pulled poison ivy vines and placed a drop of milky sap from the broken end of a leaf petiole on the skin of his forearm. After about ten minutes an irritative reaction appeared over the area covered with the caustic juice. A latent allergic reaction of the surrounding areas did not occur. Similar tests on clinically sensitive volunteers have been followed by violent reactions.

9. In the presence of two members of the American Dermatological Association, Dr. E. C. Fox and Dr. A. G. Schoch.

If walking through trailing vines and touching the shrubby and climbing plants with the hands unprotected may be considered an ordinary exposure, then the twenty-four hour patch test with the 1 : 100 dilution of this specific oil offers a reliably accurate test for ordinary clinical sensitivity. Since all that can be expected from specific therapy in highly sensitive persons is a reduction of sensitivity from the clinical to the subclinical level,[3] patch tests with concentrations stronger than 1 : 100 were not routinely made.

Preparation of Oil for Oral Therapy.—Leaves and small terminal branches of mature plants (Toxicodendron radicans) were gathered and thoroughly dried. The masses were then triturated, placed in quart jars and extracted with ether, as needed, for oral therapy. Although various batches of oils were extracted in the same manner, biologic tests showed a moderate variation in their potencies. As a standard of potency I have required that any oleoresin employed for oral therapy must cause a positive reaction on the back of a person of average sensitivity when diluted at least 2,500 times with corn oil and applied in a patch test. Lacking an accurate chemical test for the potency of poison ivy oleoresins, one must rely, for the present, on the less accurate biologic determination.

Quantitative cutaneous tests proved that oleoresins extracted from fresh green leaves and twigs are approximately five to ten times as potent as those made from thoroughly dried portions of the same plant.[7] Present data indicate, however, that oils made from fresh plants gradually deteriorate, depending on the method of storage, to the allergenic potency of oils made from dried portions of the same plant. Oral administration of oils prepared from fresh green leaves will furnish the basis of a future communication. Present data indicate that the milky sap of the poison ivy plant contains more than one dermatitis-producing fraction.[7]

Root oleoresins were extracted with ether from the bark of thoroughly dried roots of Toxicodendron radicans and Toxicodendron quercifolium. Quantitative patch tests showed that the root oil was approximately four times as potent as the leaf oleoresin.

Leaf and root oleoresins were mixed with corn oil by volume to make a 1 : 25 or 1 : 10 dilution and were dispensed in 1 ounce dropper bottles.

Dosage.—Patients were instructed to ingest 1 drop of the oleoresin–corn oil mixture daily during the first week, 2 drops daily during the second week and 3 drops daily during the third week. They were then told to increase the dosage as rapidly as tolerance permitted until 10 to 15 drops was ingested daily. A few patients were given a higher maximum dosage. Drops were placed in a no. 1 gelatin capsule and ingested immediately after the morning or evening meal. Symptoms of

intolerance for the oil, such as flare-up of healed sites of patch tests, pompholyx-like eruptions of the hands and feet and medicamentosa-like eruptions, were usually encountered during the first few weeks of treatment while the volunteer was ingesting only a few drops of the oleoresin daily. If symptoms of intolerance arose, patients were advised to discontinue treatment until all symptoms disappeared and then to begin taking the drops at the same or slightly reduced level. A tolerance for the oils usually develops. In this series only 1 patient showed toxic manifestations from the oleoresin on more than one occasion. Pruritus ani is apparently due to contact of the perianal skin with unabsorbed portions of the oleoresin. This symptom is likewise encountered chiefly in the early treatment stages. Anal pruritus often disappears even though the dosage is increased, indicating reduced sensitivity to the oil. When the daily dose has been gradually increased, toxic eruptions and pruritus ani have been negligible.

REPORT OF CASES

CASE 1.—L. C. B., a white boy aged 14, gave positive reactions to pretreatment patch tests with all dilutions of the testing oil from 1:100 through 1:1,000. During a period of three months he consumed 1 ounce of the 1:25 leaf oleoresin. The maximum dose toward the close of the treatment period was 10 drops daily. One week after completion of oral therapy, the 1:100 concentration caused a doubtful erythema, while all higher dilutions evoked no reactions. Two weeks later, the 1:10 concentration caused redness and slight swelling; the 1:50 dilution evoked redness but no swelling, and the 1:100 dilution caused only mottled erythema. Tests with higher dilutions gave negative results. A crushed poison ivy leaf was then rubbed over the upper part of the right side of the patient's back. About twenty pinhead-sized papules appeared on the contacted area after a latent period of forty-eight hours. The lower part of the back, where my contaminated fingers were rubbed, showed no reaction. Patch tests at monthly intervals for five succeeding months with all dilutions of the oleoresin from 1:10 to 1:10,000 did not result in any material increase in the level of cutaneous sensitivity. The pretreatment peak of sensitivity was an "erythematous, swollen 1,000," while the post-treatment peak was a "mottled 100."

CASE 2.—A. C., a white man aged 26, gave frankly positive reactions to patch tests with the 1:100, the 1:250 and the 1:500 dilution of the testing oleoresin. The 1:1,000 dilution caused diffuse redness with slight swelling. During a period of three months 1 ounce of a 1:25 dilution of leaf oleoresin was ingested. The maximum dose was 10 drops daily. One week after completion of oral therapy, the 1:100 dilution caused scattered pinpoint-sized macules on both sides of the back. The 1:250 dilution elicited a few scattered macules on the left side of the back but no reaction on the right side. Tests with higher dilutions elicited no reactions. Two months later the 1:10 and the 1:50 dilution caused redness and swelling but no vesicles. The 1:100 and the 1:250 dilution caused mottled erythema. Higher dilutions evoked no reactions. The pretreatment peak of sensitivity was reduced, presumably by oral therapy, from a "red, slightly swollen 1,000" to a "mottled 250."

Case 3.—E. J. D., a white girl aged 10 years, gave positive reactions to pretreatment patch tests with all dilutions of the oleoresin from 1:100 through 1:1,000. During a period of four months 1 ounce of the 1:25 leaf oleoresin was ingested. The maximum daily dose was 13 drops. The day after the last oral dose was taken the 1:100 and the 1:250 dilution caused mildly positive reactions to patch tests. Higher dilutions evoked no responses. One month later the 1:100 and the 1:250 dilution caused mild erythema on the left side of the back. On the right side the 1:100 dilution evoked a barely visible erythema, while the 1:250 dilution caused no reaction. Tests with all higher dilutions elicited no reactions. Ordinarily post-treatment patch tests are applied one week or longer after the cessation of oral therapy. Traces of the dermatitis-producing fraction of the oil can usually be demonstrated in the urine as late as the fifth day after the final dose is taken. The pretreatment peak of sensitivity was an "erythematous, swollen 1,000," whereas the post-treatment peak was a "mildly erythematous 250."

Case 4.—A. C. R., a white man aged 25, gave positive reactions to patch tests with all dilutions of the oleoresin from 1:100 through 1:1,000. During a period of four months 1 ounce of the 1:25 leaf oleoresin was ingested. The maximum dose was 15 drops daily. One week after completion of oral therapy dilutions of the oleoresin from 1:100 to 1:10,000 evoked no reactions. Two weeks later the 1:10 dilution caused a barely visible erythema. The 1:50 and all higher dilutions elicited no responses. The pretreatment peak of an "erythematous, slightly swollen 1,000" was reduced, after oral therapy, to a "barely visible 10."

Case 5.—R. A. M., a white man aged 22, gave frankly vesicular reactions to patch tests with all dilutions of the testing oleoresin from 1:100 through 1:2,500. During a period of four months 1 ounce of the 1:25 dilution of the leaf oleoresin was ingested. The maximum dose during the last few weeks of therapy was 16 drops daily. One week subsequent to oral therapy, the 1:100, the 1:250, the 1:500 and the 1:1,000 dilution of the testing oleoresin evoked frankly vesicular reactions to patch tests. The 1:2,500 and higher dilutions elicited no responses on two tests. The pretreatment peak of a "vesicular 2,500" was reduced to a post-treatment peak of a "vesicular 1,000," a reduction which might be attributed to the natural fluctuation in sensitivity of the patient.

Case 6.—R. K. P., a white man aged 24, gave positive cutaneous reactions to all dilutions of the oleoresin from 1:100 through 1:1,000. During a period of seven months 1 ounce of the 1:25 leaf oleoresin was ingested. The maximum dose was 10 drops daily. After oral therapy the 1:100 dilution caused mottled erythema. Tests with higher dilutions repeatedly elicited no reactions. A crushed ivy leaf rubbed over the upper part of the back evoked punctate erythema at the contacted sites. No eruption occurred in an area of the lower part of the back rubbed with my contaminated fingers. The pretreatment peak of sensitivity was an "erythematous swollen 1,000," whereas the post-treatment peak was a "mottled 100."

Case 7.—A. D. S., a white youth aged 16, gave frankly positive reactions to pretreatment patch tests with all dilutions of the oleoresin from 1:100 through 1:2,500. During a period of four months 1 ounce of the 1:25 leaf oil was ingested. The maximum dose was 30 drops daily during the last two weeks of oral therapy. One week subsequent to oral treatment the 1:100, the 1:250 and the 1:500 dilution of the testing oleoresin evoked erythema with slight swelling.

The 1:1,000 dilution caused a mild erythema without swelling. The pretreatment peak of a "swollen and finely vesicular 2,500" was reduced to a post-treatment peak of a "mildly erythematous 1,000."

CASE 8.—B. S., a white boy aged 12 years, was first tested during an attack of widespread, severe poison ivy dermatitis caused by rubbing a leaf of the plant over the arms, chest, abdomen and lower part of the back. Patch tests applied to the upper part of the back during the height of the dermatitis caused intense reactions with all dilutions from 1:100 through 1:1,000. Higher dilutions evoked no reactions. One month subsequent to this attack of clinical poison ivy dermatitis the reactions were unchanged. Although all dilutions from 1:100 through 1:1,000 showed intense vesicular reactions which required several weeks to heal, all higher dilutions elicited no responses. During a period of five months 1 ounce of the 1:25 leaf oleoresin was ingested. The maximum dose toward the end of the treatment period was 10 drops daily. One week after cessation of oral therapy, the 1:100, the 1:250 and the 1:500 dilutions of the testing oleoresin evoked redness, swelling and pinpoint-sized vesiculation. The 1:1,000 dilution elicited mild erythema without swelling. The pretreatment peak of sensitivity was an "intensely vesicular 1,000," whereas the post-treatment peak was a "mildly erythematous nonswollen 1,000." The moderate reduction in the level of cutaneous sensitivity after oral therapy again may be attributed to the spontaneous fluctuation in sensitivity of the patient.

CASE 9.—F. W., a white woman aged 18, gave positive reactions to pretreatment patch tests with all dilutions of the testing oleoresin from 1:100 through 1:1,000. During a period of four months 1 ounce of the 1:25 leaf oleoresin was ingested. The maximum dose was 10 drops daily. One week subsequent to oral therapy patch tests with the 1:100, the 1:250 and the 1:500 dilution evoked mildly positive reactions. Higher dilutions evoked no reactions. The slight reduction of cutaneous sensitivity in this case may also be attributed to the normal fluctuation in sensitivity of the patient rather than to the effects of oral treatment. Subsequent patch tests caused a return of the level of cutaneous sensitivity to the pretreatment peak of a "red and swollen 1,000."

CASE 10.—D. F., a white man aged 19, gave frankly vesicular reactions to patch tests with all dilutions of the oleoresin from 1:100 through 1:2,500. During a period of four months 1 ounce of the 1:10 leaf oleoresin was consumed. Toward the end of the treatment period 25 drops of the oil was ingested daily. After oral therapy the 1:100, the 1:250 and the 1:500 dilution of the patch test oleoresin evoked scattered erythematous macules. Higher dilutions caused no reactions. A crushed poison ivy leaf rubbed over a wide area of the right side of the back caused scattered follicular papules. Two weeks later, the 1:10 dilution evoked redness and swelling but no vesicles; the 1:50 dilution elicited scattered papules, and the 1:100, the 1:250 and the 1:500 dilution caused mottled erythema. Tests with higher dilutions gave negative results. Although this patient reacted to relatively high dilutions after oral therapy, the severity of the responses was materially reduced. The pretreatment peak of sensitivity of a "frankly vesicular 2,500" was reduced to a post-treatment peak of a "mottled 500."

CASE 11.—Mrs. F. H., a white woman aged 45, gave frankly vesicular reactions to patch tests with all dilutions of the oleoresin from 1:100 through 1:10,000. Tests with higher dilutions were not made. The 1:10,000 dilution, boiled over a flame for two minutes, evoked a vesicular response. Several widespread attacks

of poison ivy dermatitis were traced to the mere handling of her son's contaminated clothing. During a period of three months 1 ounce of the 1:10 dilution of the leaf oleoresin was ingested. The maximum daily dose was 15 drops. After oral therapy the 1:100 dilution of the patch test oleoresin evoked redness and swelling but no vesicles. The 1:250 and the 1:500 dilution caused redness and slight swelling. The 1:1,000 dilution elicited a mottled erythema in the center of the patch site. Tests with higher dilutions were negative. A poison ivy leaf vigorously rubbed over a wide area of the lower part of the back at this time caused redness and swelling but no vesiculation. This reaction approximately equaled that evoked by the 1:100 dilution of the testing oleoresin. Although this patient stated that she purposely exposed herself to poison ivy on many occasions during the latter weeks of oral therapy and did not suffer a subsequent dermatitis, the result of treatment in this case was not considered satisfactory. No clinical exposure is recorded unless actually observed. Reduction in cutaneous sensitivity of this patient is indicated, however, by the fact that the pretreatment peak of sensitivity was a "vesicular 10,000," while the post-treatment peak was a "mottled 1,000."

Case 12.—M. H., a white woman aged 18, was a daughter of the aforementioned patient (case 11). Previous to oral therapy patch tests with all dilutions of the patch test oleoresin from 1:100 through 1:2,500 evoked frankly positive reactions. On one occasion the 1:5,000 dilution caused a mild erythema. During a period of three months 1 ounce of the 1:10 leaf oleoresin was ingested. The maximum dose during the last week of oral treatment was 30 drops daily. One week after oral therapy the 1:100, the 1:250 and the 1:500 dilution elicited redness and slight swelling. The 1:1,000 dilution caused a mottled erythema. Higher dilutions evoked no reactions. A crushed poison ivy leaf vigorously rubbed over the lower part of the back at this time caused redness and swelling but no vesicles. Six weeks later the 1:100 and the 1:250 dilution evoked redness and swelling; the 1:500 elicited redness but no swelling, and the 1:1,000 caused a barely visible mottled erythema in the center of the tested site. Although the result in this case was also considered unsatisfactory, the peak of sensitivity was reduced from a "red and swollen 2,500" to a "barely visible 1,000."

Case 13.—W. H. H., a white man aged 21, was a brother of M. H. (case 12) and the son of Mrs. F. H. (case 11). Previous to oral therapy patch tests with all dilutions of the testing oleoresin from 1:100 through 1:1,000 evoked positive reactions. Higher dilutions elicited no responses. A crushed poison ivy leaf rubbed over the upper part of the back at this time caused widespread redness and decided swelling but did not evoke frank vesiculation. My contaminated fingers rubbed over the lower part of the back caused a similar reaction. During a period of three months 1 ounce of the 1:10 leaf oleoresin was ingested. The maximum daily dose was 12 drops. One week after the final oral dose all test dilutions from 1:100 through 1:10,000 evoked no reactions. One month later the 1:100 dilution elicted four follicular papules at the site of the patch test. Tests with higher dilutions caused no reaction. A crushed poison ivy leaf vigorously rubbed over a wide area of the back caused scattered follicular papules in some areas but no reaction in others. An area similarly rubbed with my contaminated fingers showed no reaction. A few days later a patch test with the 1:10 dilution caused redness but no swelling. The 1:50 and the 1:100 dilution caused a few scattered macules. Higher dilutions evoked no reactions. Repeated clinical exposures to poison ivy were not followed by dermatitis.

CASE 14.—A. E. S., a white man aged 25, gave a history of repeated attacks of poison ivy dermatitis yet showed positive reactions only to patch tests with the 1:100, the 1:250 and the 1:500 dilution of the testing oleoresin. The 1:1,000 dilution elicited a mildly positive reaction on one occasion. This patient lived in a district highly infested with poison ivy; so the repeated attacks of dermatitis were apparently caused by the degree of exposure rather than by a decided cutaneous sensitivity. During a period of four months 1 ounce of the 1:10 leaf oleoresin was ingested. The maximum dose was 30 drops daily during the final week of treatment. One week subsequent to oral therapy the 1:100 patch dilution elicited four scattered follicular papules. All higher dilutions evoked no reactions. One month later the 1:10 and the 1:50 dilution caused scattered follicular papules. Tests with the 1:100 and higher dilutions gave negative results. A crushed poison ivy leaf rubbed over the back at this time caused diffuse follicular papules, which appeared on the second day but were barely visible on the fifth day. The peak of sensitivity of a "red and swollen 500" was reduced to a "constant scattered folliculopapular 50."

CASE 15.—J. G. K., a white man aged 30, was forced to discontinue hunting and fishing because of repeated attacks of poison ivy dermatitis. Previous to oral therapy patch tests with all dilutions of the testing oleoresin from 1:100 through 1:1,000 caused frankly vesicular reactions. During a period of five months 1 ounce of the 1:10 leaf oleoresin was ingested. The maximum dose was 10 drops daily. Subsequent to oral therapy the 1:100 and and the 1:250 dilution caused erythematous responses. Tests with higher dilutions elicited no reactions. A crushed poison ivy leaf vigorously rubbed over the back at this time caused a follicular, papular dermatitis. The repeated handling of two potted poison ivy plants kept in my office was not followed by dermatitis. Since the patient considered my plants impotent, he collected a poison ivy vine and rubbed the leaves over his forearms. Two days later a mild erythema appeared over the web between the second and the third fingers of the right hand. There was no evidence of dermatitis on any other portion of the body. He then resumed hunting and fishing. He stated[9] that, to help others, he cut down with his pocket knife every poison ivy plant he encountered and cleaned the contaminated blade on his trousers. Dermatitis did not follow these contacts. Five months after these alleged exposures, the 1:100 patch dilution evoked redness with slight swelling, and the 1:250, the 1:500 and the 1:1,000 dilution evoked mild erythema without swelling.

CASE 16.—F. G., a white girl aged 16, before being treated gave frankly positive reactions to patch tests with all dilutions of the testing oleoresin from 1:100 through 1:2,500. On one occasion the 1:5,000 dilution caused a mild erythema, and on another the 1:10,000 evoked a few papules in the center of the tested site. The constant peak sensitivity was a "red and swollen 2,500." During a period of two months the equivalent of 1 ounce of the 1:25 root oleoresin was ingested. One week subsequent to the completion of oral treatment the 1:100, the 1:250 and the 1:500 dilution of the testing oleoresin evoked slightly elevated erythematous reactions. There were no reactions to tests with higher dilutions. One month later all dilutions from 1:100 through 1:1,000 evoked frankly positive reactions. Six weeks later the 1:100, the 1:250 and the 1:500 dilution evoked intense reactions with vesiculation and oozing. The 1:1,000 dilution caused redness and decided swelling but no true vesicles. The 1:2,500 dilution caused redness with moderate swelling. Post-treatment patch tests had caused a return of the level of cutaneous sensitivity to the approximate pretreatment level.

CASE 17.—Dr. J. G. B., a white man aged 34, an assistant in my office, was repeatedly given patch tests with various poison ivy extracts for eight years. His level of cutaneous sensitivity remained approximately constant during this entire period. A crushed poison ivy leaf rubbed over the forearm was followed by an intense vesicular dermatitis. Previous to oral therapy patch tests with all dilutions of the testing extract from 1 : 100 through 1 : 1,000 evoked frankly positive reactions. During a period of five months the equivalent of 1 ounce of the 1 : 25 root oleoresin was ingested. After oral therapy patch tests with all dilutions of the testing oleoresin from 1 : 100 to 1 : 10,000 elicited no reactions. A crushed poison ivy leaf repeatedly rubbed over the forearms at this time caused redness but no swelling and no pruritus. A leaf similarly rubbed over the back caused scattered, barely visible, pinpoint-sized macules. Frequent clinical exposures to poison ivy were not followed by dermatitis. Repeated cutaneous tests with all dilutions of the testing oleoresins from 1 : 100 to 1 : 10,000 did not increase the sensitivity of the skin.

CASE 18.—G. M. C., a white man aged 22, before being treated gave positive reactions to patch tests with all dilutions of the testing oleoresin from 1 : 100 through 1 : 1,000. During a period of four months 1 ounce of the 1 : 10 root oleoresin was ingested. Subsequent to oral therapy the 1 : 100 patch dilution caused redness and slight swelling; the 1 : 250 dilution evoked erythema without swelling. Tests with higher dilutions elicited no reactions. A crushed poison ivy leaf vigorously rubbed over the lower part of the back evoked follicular erythematous papules. The pretreatment peak of sensitivity of an "erythematous and swollen 1,000" was reduced to a post-treatment "erythematous 250."

CASE 19.—Mrs. J. S., a white woman aged 22, gave frankly positive reactions to patch tests with all dilutions of the testing oleoresin from 1 : 100 through 1 : 5,000. During a period of seven months one ounce of the 1 : 10 root oleoresin was ingested. Because of pruritus ani and repeated mild erythematous toxic eruptions during the first two months of treatment, the maximum dose ingested during that time was 3 drops daily. Toward the end of the treatment period the ingestion of 12 drops daily caused no symptoms of intolerance or pruritus ani. After oral therapy the 1 : 100 testing dilution evoked ten pinpoint-sized macules. All higher dilutions elicited no reactions. Vigorous rubbing of a crushed poison ivy leaf over the patient's back one week later was followed by the appearance of scattered pinpoint-sized macules. One month later the 1 : 250 dilution evoked scattered macules on one side of the back but caused no reaction on the opposite side. The 1 : 100 dilution caused redness and doubtful swelling on both sides of the back. Tests with higher dilutions caused no reactions. Two weeks later the 1 : 500 dilution caused a mild erythema on one side of the back but evoked no reaction on the opposite side. The 1 : 100 and the 1 : 250 dilution evoked erythema with slight swelling on both sides of the back. Higher dilutions elicited no reactions. A pretreatment peak of sensitivity of a "vesicular 5,000" was reduced to a post-treatment peak of a "macular 100."

CASE 20.—Dr. J. B. H., a white man aged 26, an assistant in my office, was repeatedly given patch tests with various dilutions of poison ivy extract for two years. Before oral therapy, all dilutions of the testing oleoresin from 1 : 100 through 1 : 5,000 evoked positive cutaneous responses. During a period of five months 1 ounce of the 1 : 10 root oleoresin was ingested. The maximum dose was 12 drops daily. After oral therapy, the 1 : 250 dilution evoked 3 papules at the tested site and

the 1:100 concentration caused diffuse redness with slight swelling. Tests with all higher dilutions elicited no reactions. A crushed poison ivy leaf vigorously rubbed over the upper part of the back at this time caused follicular papules at some of the contacted areas and erythema with slight swelling at other sites. Areas vigorously rubbed with my contaminated fingers evoked follicular erythematous papules. Several clinical exposures to poison ivy were not followed by dermatitis. This patient was subsequently given five patch tests, at monthly intervals, with the testing oil. The 1:100 dilution consistently elicited mildly positive reactions; the 1:250 dilution evoked mildly positive responses on two occasions but caused no reaction on three retests. On the second of these monthly tests, the 1:500 dilution evoked a mottled redness at the tested site. On all other occasions this dilution evoked no reaction. Tests with all higher dilutions consistently elicited no reactions. The pretreatment peak of sensitivity of a "red and swollen 5,000" was reduced to a post-treatment peak of a "papular 250."

It requires approximately 2 drops of the ivy and corn oil mixture to equal 1 minim (0.06 cc.). In computing dosage it should be remembered that 800 to 900 drops of the oleoresin is required to equal 1 ounce (30 cc.) of this mixture delivered from the ordinary dropper fitted in the commercial screw cap dropper bottle.

Almost all of the aforementioned patients were also given patch tests before and after oral treatment with test dilutions made from fresh green poison ivy leaves. Pretreatment positive reactions were evoked in some cases with this oleoresin when diluted 30,000 to 50,000 times with corn oil. Although the relative reduction in cutaneous sensitivity after oral therapy was more marked when quantitative tests were made with this oil, the results are not recorded, since I have no proof that an oleoresin made in this manner and stored in frequently opened dropper bottles retains its original potency for nine months, the period during which some of these patients were tested.

The allergenic potencies of leaves of different poison ivy plants of the same species vary greatly. The dermatitis-producing index of leaves of a single plant on rubbing tests also varies according to the state of succulence of the specimen. The availability of the oleoresin for contact with cells of the skin depends to a decided degree on the fluid content of the plant. The leaves used in the rubbing tests in this report were from a frequently watered potted specimen of Toxicodendron radicans, var. Rydbergii, collected in Lincoln, Neb., with the assistance of Dr. Bruce Palmer. Rubbing with the leaves of this plant and with my contaminated fingers caused marked reactions on untreated controls.

At 8:00 a. m. several leaves from this plant were vigorously rubbed between my palms and the palmar surfaces of my fingers. Five minutes later my hands were thoroughly washed with soap and water for one minute. During the subsequent five hours routine office practice was conducted. In the four following days localized dermatitis in 9 persons

was traced to contact with my contaminated fingers. Three patients presented dermatitis on the buttocks at sites massaged after bismuth medication. Two persons showed erythematous streaks of dermatitis in the cubital fossae and on the upper part of the forearms following injections of arsphenamine. Dr. J. H. Black, a well known allergist, and an office nurse had localized eruptions of the forearms at sites inadvertently touched with my contaminated finger tips. Five vesicular bands of dermatitis, corresponding to the imprint of the fingers of my left hand, appeared on the under surface of the breast of a woman after the curettage of a fibrous mole from the inframammary fossa. A manicurist, who manicured my nails acquired an intense vesicular dermatitis of the dorsal surface of the left hand. Since a subsequent attack of ivy dermatitis of this area was traced by Drs. Schoch and Fox to contact with my ivy-contaminated fingers, this woman purchased rubber gloves for wear during any future manicure of my nails. The leaves of this plant were, therefore, of average potency.

All except 3 persons reported on in this series were paid a stipulated fee of $10 for pretreatment quantitative patch tests, ingestion of 1 ounce of the oleoresin and post-treatment serial tests. They were given a small additional fee for subsequent quantitative tests. The number of capsules furnished, rapidity of change in the fluid level of the treatment bottle and toxic manifestations were recorded. Empty bottles were returned after completion of oral therapy. I have reason to believe that the entire prescribed oral dosage was ingested by all patients. No person in this series permanently discontinued treatment because of pruritus ani or toxic manifestations.

Since many of the treated subjects completed oral therapy during the dormant season of poison ivy in this vicinity (November to April), ordinary clinical exposures to the plant could not be made by these persons previous to the presentation of this paper. Patients showing a frankly positive post-treatment reaction to a patch test with the 1 : 100 dilution of the testing oleoresin were not considered sufficiently hyposensitized to submit to such a test.

SUMMARY

Twenty persons sensitive to poison ivy ingested, during a period of several months, 1 ounce of a 1 : 25 or 1 : 10 dilution of poison ivy leaf or root oleoresin in corn oil. Pretreatment and post-treatment quantitative patch tests demonstrated that varying degrees of reduction of cutaneous sensitivity followed ingestion of the specific oil. No reduction of the level of sensitivity of the skin occurred in untreated controls. The results of oral therapy paralleled those usually attained in the percutaneous treatment of asthma and hay fever, satisfactory clinical results

being attained in some cases and unsatisfactory results in others. Clinical exposures and repeated testing of the skin with dilutions of the oleoresin in corn oil did not result in an increase in the level of cutaneous sensitivity of the majority of those persons hyposensitized by oral therapy.

ABSTRACT OF DISCUSSION

DR. HERMAN SHARLIT, New York: Experience that is contrary to usual expectation arouses investigation.

Last summer a patient appeared at the Skin and Cancer Unit of the New York Post-Graduate Medical School and Hospital with an extensive dermatitis venenata due to Rhus. He was given a patch test with 2 per cent acetone extract of root, supplied by Dr. Shelmire. Such root oils are irritating. The reaction was absolutely negative and my associates and I seriously questioned whether we were dealing with a condition due to Rhus toxicodendron. The patient brought the leaf which he thought had caused the eruption, and it looked like a poison ivy leaf to us. We gave him patch tests with the leaf, which elicited a tremendous reaction, but there was no reaction from a patch test with a 2 per cent acetone extract of the leaf. It was a challenging observation. Was the patient sensitive to something other than the oleoresins in this leaf? Was the oleoresin as applied in acetone extract not able to penetrate the external surface of the skin and elicit a reaction, while in its true emulsified state in the leaf it was able to irritate the skin?

We undertook to make extracts of this same root using 1 per cent of a wetting agent in distilled water. With comparable extracts made with this wetting agent solution and with acetone, we found that we were able to get comparable cutaneous reactions. We have only had a few opportunities to make this observation, but we should seriously consider going beyond the use of lipid solvents in making these extracts.

The wetting agent we used was an ester derivative of succinic acid. This agent can emulsify the oleoresin with water. To what extent it completely removes the oil from the leaf I do not know, but the extract appears to be at least as effective as one in acetone in terms of irritating capacity. If this suspicion proves true, it appears that if oral administration of poison ivy irritant is the proper procedure for desensitization one might reconsider an adequately dehydrated leaf, pulverized and put into capsules for swallowing, as an allergenic source involving the complete leaf substance and not limited to the lipid fraction. This variation might be of significance. After all, poison ivy poisoning is a challenging problem in medicine. The economic losses caused by it are tremendous.

DR. RUBEN NOMLAND, Iowa City, Iowa: Persons who have followed Dr. Shelmire's papers on plant dermatitis, in the use of oil in testing and in desensitizing, realize that he is blazing a new trail in the study of contact dermatitis caused by plants.

For the past three years I have, in a small way, been carrying out the same work, and I have found that the ether extract of plants apparently carries the sensitizing substance. This includes not only poison ivy but also plants such as ragweed, cocklebur, stinkweed and various other weeds, patch tests with which elicit positive reactions to persons clinically sensitive to them. I have not made any serial patch tests with various dilutions to show hyposensitization. However, I have been able to produce clinical hyposensitization in probably better than three fourths of the patients, by treating them with a 1 per cent oil solution of

the oleoresin dissolved from the dried plant by ether, giving it in much the same way which Dr. Shelmire has outlined. A considerable number of subjects have been able to return to their work of farming and be comfortable, even though they continue to expose themselves to the weed. A great many of them probably would have had to seek other work if they had not been hyposensitized.

Dr. Bedford Shelmire, Dallas, Texas: Dr. Sharlit stated that a patient who presented a typical dermatitis venenata, presumably following contact with poison ivy, failed to show a positive reaction to a patch test with the 1:50 dilution of poison ivy root oil yet showed a positive response to the twenty-four hour test with the bruised leaf. About a year ago I sent Dr. Sharlit some poison ivy roots. I can vouch for the fact that the oil from these roots was highly potent. My only explanation for his experience is that the generalized eruption and the response to the twenty-four hour test with the bruished leaf were irritative reactions.

I am pleased to hear that a careful observer, Dr. Nomland, feels that cutaneous sensitivity to plants can be reduced by oral therapy.

SULFONATED OIL AS A DETERGENT

ITS USE IN A DERMATOLOGIC WARD

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There has been much interest among dermatologists in the new substitutes for soap as cleaning agents for the skin.[1] One of these preparations, a sulfonated oil, has been under study in the dermatologic department of the Massachusetts General Hospital for the past four years. Enough preliminary work has been done with patch tests and the effects on the hands have been sufficiently satisfactory to warrant a wider use of the preparation in the treatment of various diseases of the skin.

Therefore during the year 1940 a sulfonated oil preparation[2] was used with water as a detergent by all patients admitted to the dermatologic ward, of nineteen beds, at the Massachusetts General Hospital. This preparation has been described previously[3] as a mixture of 25 per cent sulfonated mixed olive and teaseed oils, 25 per cent liquid petrolatum and 50 per cent water. It is miscible with water and has a p_H of 6.5. Complete records were not kept for all the patients admitted, those omitted being for the most part syphilitic patients with normal skins. There are, however, adequate records of 183 patients with forty-one different diseases who used the sulfonated oil for cleansing purposes during their stay in the hospital. Hospitalization varied from four to

Read at the Sixty-Fourth Annual Meeting of the American Dermatological Association, Inc., New Orleans, April 9, 1941.

1. (*a*) Jordan, J. W.; Dolce, F. A., and Osborne, E. D.: Dermatitis of the Hands in Housewives: Role of Soap in Its Etiology and Methods for Its Prevention, J. A. M. A. **115**:1001-1006 (Sept. 21) 1940. (*b*) Klauder, J. V.; Gross, E. R., and Brown, H.: Prevention of Industrial Dermatitis, with Reference to Protective Hand Creams, Soap and the Harmful Role of Some Cleansing Agents, Arch. Dermat. & Syph. **41**:331-356 (Feb.) 1940. (*c*) French, E. D.: Experiences with Hydrophil Bases and Sulfonated Products, South. M. J. **34**:284-287 (March) 1941. (*d*) Lane, C. G., and Blank, I. H.: Sulfonated Oil as a Detergent for Diseases of the Skin, Arch. Dermat. & Syph. **43**:435-443 (March) 1941.

2. This product was acidolate, manufactured by the National Oil Products Company, Harrison, N. J.

3. Blank, I. H.: Action of Soap on Skin, Arch. Dermat. & Syph. **39**:811-824 (May) 1939.

one hundred and seventy-six days, with an average of twenty days. The nursing personnel also used the same preparation to the exclusion of soap during this time. Each patient was supplied with an 8 ounce (240 cc.) bottle of the liquid, and the wash bowls were equipped with liquid soap dispensers. The total amount used in the ward during the year was 90 gallons (340 liters). No soap was used by the patients during this period except by male patients for shaving.

In the practical procedure of washing the hands or face, the patient poured a small amount of the preparation, probably less than ¼ ounce (7.5 cc.), on his dry or slightly moistened hands, rubbed it well over the surface of the skin or mixed it well with any ointment which might be on the skin and then washed it off with plenty of warm water.

The patient for whom a tub bath was prescribed got into a tub of warm water, then rubbed his body well with a moistened wash cloth onto which the sulfonated oil had been poured and proceeded to rinse

TABLE 1.—*Age Distribution of Patients*

Age in Years	Number of Patients
0 to 9	18
10 to 19	23
20 to 29	37
30 to 39	23
40 to 49	33
50 to 59	80
60 to 69	13
70 to 79	5
80 to 89	1

his skin thoroughly. The bed bath was given in a similar manner by a nurse using a moistened wash cloth onto which some of the oil had been poured and subsequently washing well with clear water and drying.

A majority of the shampoos were given in the morning, application of an ointment to the scalp having been made the previous evening. The sulfonated oil was poured onto the scalp (no water previously added), mixed well with the residual ointment and then washed out well with warm water. Usually the oil was applied a second time and rinsed out. Shampooing was seldom done by the patient without the assistance of a nurse. Soap was not used in conjunction with sulfonated oil.

Observations were recorded on the cleansing effects of the preparation, the symptoms mentioned by the patient and the visible changes in the skin or in the disease while the patient was under this regimen.

Among the 183 patients, there were 99 males and 84 females. The age distribution is shown in table 1.

During the year opportunity was afforded for observation of the effects of this preparation on the skins of patients having forty-one

different diseases. As soap is the most widely used detergent, an attempt was made to group these diseases with regard to past dermatologic experience with soap. Group 1 includes patients with diseases of the skin in which soap is nearly always poorly tolerated. Most of these diseases were in the dermatitis-eczema group. Group 2 includes patients with diseases for which soap would not be contraindicated on account of the cutaneous condition. Group 3 includes patients with diseases during some phase of which the use of soap is frequently forbidden.

TABLE 2.—*Grouping of Patients According to Past Dermatologic Experience*

	Diagnosis	Number of Patients
Group 1	Contact dermatitis	24
	Atopic dermatitis	13
	Infantile eczema	13
	Seborrheic dermatitis	9
	Exfoliative dermatitis	9
	Dermatitis of unknown cause	14
	Prurigo	1
	Total	83
Group 2	Primary and secondary syphilis	12
	Syphilis of the central nervous system (patient hospitalized for malarial therapy)	15
	Chancroid	1
	Lupus erythematosus	10
	Lupus vulgaris	3
	Sycosis vulgaris	5
	Urticaria	3
	Impetigo	3
	Dermatitis factitia	2
	Cellulitis	2
	Miscellaneous (1 each)	14
	Total	70
Group 3	Dermatophytosis	9
	Psoriasis	6
	Varicose ulcers (some with eczema)	4
	Mycosis fungoides	3
	Dermatitis medicamentosa	2
	Dermatitis herpetiformis	2
	Pemphigus	3
	Pruritus ani	1
	Total	30

RESULTS OF USE OF SULFONATED OIL AS A DETERGENT

Forty-one patients with various diseases stated that soap had previously irritated their skin, causing one or more symptoms such as the following: dryness, burning, cracking, scaling and "irritation." This group was observed particularly, and 75 per cent found that sulfonated oil was a satisfactory substitute for soap in that no annoying symptoms were caused during its use.

Subjective Reactions.—Fourteen of the 183 patients complained of stinging following the use of this preparation. Each of these patients had open lesions, such as fissures or ruptured bullae. Even though many patients with open lesions did not complain of stinging, it is our impression that the oil does smart when used on open lesions and that

the complaint is justifiable. This smarting is no worse than when soap is used and lasts no longer than a minute or so after the oil is rinsed off; it need not necessarily be considered a contraindication to its use.

Nine of the 183 patients complained of burning. All of these also had open lesions, and it is possible that the term "burning" was confused in their minds with "stinging." It is doubtful if there is any actual feeling of warmth when the oil is used.

Eight patients said they thought their skin seemed redder after using the oil. Six of these had open lesions. It is, of course, difficult to differentiate between erythema caused by the oil and that caused by the warm water.

Eleven of the patients said that itching was worse after using the oil. It is always difficult to find one specific cause for itching, and, in spite of subjective reaction to the oil in these 11 patients, it is a question whether the oil alone was responsible for increased itching in any case except 1, which will be discussed in another part of the paper.

Thirty-five of 166 patients (21 per cent) said their skin seemed drier when using the oil than when using soap. Forty-two of 129 patients (33 per cent) said their skin felt oilier than when using soap. Of the patients in group 1, who normally would be asked not to use soap, 20 (24 per cent) said the oil was drying for their skin, and 14 (17 per cent) said it made their skin oilier than when soap was used. Of the patients in group 2, those whose dermatitis should not be influenced by soap, 14 (20 per cent) said the oil made their skin drier, and 22 (31 per cent) said it made the skin oilier. Five of 9 patients with exfoliative dermatitis complained of dryness; only 1 of 9 patients with seborrheic dermatitis complained of dryness.

It is of interest that, in spite of the oily feel and lack of lather, only 7 of 183 patients said that they did not think that oil cleaned the skin as well as soap. It would have been more natural for the majority to have said that it did not clean well, because it is so different from soap and so much like liquid petrolatum or olive oil, which many had undoubtedly used with unsatisfactory results.

Objective Observations.—The staff and the nurses agreed that the oil provided satisfactory cleansing in all instances. This ability of the preparation to clean well and easily has proved an important nursing aid. It is much simpler and easier to remove ointments, especially those with a petrolatum base, with this sulfonated oil than with soap. This is particularly true in cases of diseases of the scalp. It has proved of special value in removing coal tar and ointments containing tar. The preparation has been of sufficient value to warrant the continuance of its use as a cleansing agent.

It is our impression that the sulfonated oil, because of its good emulsifying properties, causes excessive dryness in patients with diseases of the skin which are characterized, for the most part, by dry, scaling, possibly lichenfied lesions, such as the conditions observed in the later stages of exfoliative dermatitis and contact dermatitis in older persons and pruritus hiemalis and senilis, and should not be used for these conditions. At one time it was thought that in some of the cases of exfoliative dermatitis healing was not progressing as well as might be expected, and the use of the oil was stopped and colloid baths substituted. It is doubtful that any more rapid progress was made after this substitution, but we agree that it is not wise to use the oil in such cases because of the drying effect. It is generally agreed that soap also does not do well in these cases.

Patients with greasy seborrhea, particularly of the scalp, seldom complained of dryness following the use of the oil, and we think it is particularly valuable for such conditions. We doubt, however, that the skin was actually oilier in the 42 patients who said that the use of the oil left their skin more oily than soap would have left it. This seems more likely to have been a psychologic reaction to the initial oily feel of the preparation.

Only 1 patient throughout the year showed an apparent hypersensitivity to oil. This patient had psoriasis and a superimposed contact dermatitis or irritation from soap. Her dermatitis became worse after the use of the oil, and her skin showed a strong papular reaction to a patch test with the oil at the end of tweny-four hours. With this exception and the possibility aforementioned, that in some cases of exfoliative dermatosis the skin was made too dry by the use of the oil, neither the resident nor members of the nursing staff reported dermatitis, irritation, erythema or dryness in any patient which was thought to be produced by the use of the oil, even in patients who complained of increased itching. There was also no evidence of any increase in the amount of secondary infection, which occasionally develops in patients in dermatologic wards.

There was an average of 5 student nurses and 1 graduate nurse in the ward at all times. During this year the nurses used the preparation for washing the hands after treating patients with contagious diseases, such as impetigo and secondary syphilis. No scrubbing brushes were used. After treatment of such patients the nurse washed three times with oil and warm water. During the entire year only 1 nurse had an infection (on one finger) while on duty in the dermatologic ward, a much better record than in previous years. None of the contagious diseases of patients treated was contracted by any nurse while on duty.

SUMMARY

The use of a preparation of sulfonated oil and water has been the only method of cleansing the skin of more than 183 patients in a dermatologic ward during 1940. The patients were hospitalized for periods varying from four to one hundred and seventy-six days, with an average of twenty days.

Forty-one different diseases are represented in this group of patients.

About 45 per cent of the patients had cutaneous changes for which soap would have been considered an irritant, and 22 per cent had previous subjective symptoms of the skin associated with the use of soap; however, 75 per cent of the latter subjects tolerated the oil satisfactorily.

Less than 10 per cent of the patients complained of any burning, stinging, itching or erythema; 21 per cent said the use of the oil made their skin drier, and 33 per cent said oilier.

More or less generalized, dry, scaling or lichenified lesions, especially in the older age groups, are made drier, and the use of the oil is not advisable in such cases.

Only 1 patient showed an apparent hypersensitivity to the oil.

The incidence of infection among the nursing staff was less than in previous years, when soap was used.

The oil is of much value as an aid to the therapy of the oily dermatoses, and it is an important nursing aid for the removal of ointments from the scalp and the glabrous skin, particularly ointments with a a base of petrolatum and ointments containing tar. It is a much more satisfactory detergent than liquid petrolatum, olive oil or colloid baths and is nonirritating for the great majority of patients for whom soap is contraindicated.

ABSTRACT OF DISCUSSION

DR. EARL D. OSBORNE, Buffalo: The use of sulfonated oil of this type has many practical advantages to dermatologists and is of great value in private practice. I have used a great deal of this particular sulfonated oil, and I should like to emphasize that the preparation employed must be a proper sulfonated oil and not just any sulfonated oil, particularly for patients with pruritus ani, for whom it is desirable to eliminate soap as an irritating factor in the anal canal. For use even on the normal scalp as an ordinary shampoo this oil is excellent. It rinses out rapidly and easily with warm water. For patients in the hospital, in whom so-called hospital itch develops from contact with bed linen (the erythematous dermatitis of the arms, legs, back and buttocks from contact with laundry chemicals), the substitution of this preparation for soap is well worth while. For physicians who have a dermatitis from scrubbing materials it is extremely valuable. I know of a number of surgeons who substituted this preparation entirely for any preparation of soap or any other detergent, with good results.

I might say that studies by bacteriologists indicate that the bacterial count of the skin is more reduced by the use of sulfonated oil than by the use of any of the soap preparations.

There are two objections to this preparation. One is that it is a liquid and, therefore, difficult to use on extensive areas of the body. Many persons object to its use on the face. That is a real objection. The second objection is the expense. There is no question but that many drug stores take advantage and charge more than the usual 75 cents for 8 ounces.

Dr. Jacob Hyams Swartz, Boston: I have had a chance to follow about 200 patients with dermatoses in private practice who used the sulfonated oil Dr. Lane and Dr. Blank mentioned. Those that I particularly watched had contact dermatitis, atopic dermatitis, seborrheic dermatitis and acne vulgaris.

I was particularly interested in observing the amount of irritation and burning or the number of positive reactions to patch tests that it produced, as compared with soap. In this group about 10 or 5 per cent either complained of burning or irritation or had some slight dermatitis. Of these only 2 or 1 per cent showed a positive reaction to a patch test. By positive reaction I mean a papular or a vesicular eruption. I observed also, as Dr. Osborne and the authors have mentioned, that it is useful as a shampoo, and it is likewise useful in the treatment of acne vulgaris. "It cuts the grease," as many patients mentioned, and makes the skin feel and look much less muddy. The patients who complained about irritation or burning included 6 with contact dermatitis, 3 with seborrheic dermatitis, 1 with atopic dermatitis and 1 with acne vulgaris.

It is important to instruct the patient to use the sulfonated oil not only for washing the hands but for bathing and to avoid any contact with soap. I believe that some of the failures may be due to omission of such instructions.

Dr. Lee McCarthy, Washington, D. C.: It is curious how such different experiences can be obtained with the same product. I have been using the same detergent in private practice. I thought it was good for patients with generalized eczema who could not use soap. Without exception, I have found it to be much more irritating than soap. A patient who cannot use soap cannot use this sulfonated oil. I should like to call attention to the fact that it is injurious when used by blond women in the summer who spend the summer at the seashore. They have to shampoo their hair more often. Many a dermatologist will probably recall that a great many women have asked why their hair was so dry and brittle and why their scalp itched at the end of the summer. As a matter of fact, the drying action of this product is so great that I now routinely prescribe it in the treatment of seborrhea and acne of the face.

Dr. John G. Downing, Boston: I advised some of my industrial patients who had extensive dermatitis to use this product, and they found it very useful. Few complained that it irritated their skin. They could use it when they could not use ordinary soap. The sulfonated oils are being used in so many different proprietary shampoos that it would be advisable to be careful about recommending this group of oils.

There is one thought that must be considered: How about the possibility of carcinogenic properties in these sulfonated oils?

Dr. Donald M. Pillsbury, Philadelphia: I have had limited experience with the preparation Drs. Lane and Blank have used and fairly wide experience with a cream type of cleansing agent containing 1 per cent sodium lauryl sulfate, hydrocarbons and cetyl and stearyl alcohols. In general, such preparations are not as satisfactory as soap from the standpoint of cleansing effect. If the amount of wetting agent is increased to a point at which the cleansing action is as good as that of soap, a drying or "defatting" action is often produced on the skin.

I agree with Osborne and his co-workers that alkyl sulfates are superior to sulfonated oils as detergent agents. It is my feeling that it is advantageous to incorporate the wetting agent in some type of grease if an excessive defatting action is to be avoided. It is difficult to induce patients to use a cream or liquid preparation regularly; a cake form is more convenient. There is a factor of the patient's usual habits of washing to be considered.

The cleansing cream which I have used has proved most helpful in the treatment of ichthyosis, and I regard it as a most valuable single measure for controlling this disease. It is also helpful in the treatment of senile pruritus, especially when the skin is dry. I have used it regularly in cleansing the skin in cases of infantile eczema, with good results, though it is possibly less useful in seborrheic eczema than in other types. In cases of eczema of the hands these cleansing agents have had varying amounts of success, which is not surprising, in view of the diverse etiologic factors concerned in such cases. One of our patients showed a marked reaction and was found to be sensitive to both sodium lauryl sulfate in a strength of 1 per cent and cetyl alcohol.

Dr. Joseph Victor Klauder, Philadelphia: There is an increasing number of soap substitutes now available. This choice is desirable. In addition to the commercially available preparations one can recommend the use of a plain sulfonated oil, such as castor oil, olive oil or neat's-foot oil. If it is determined that the patient's skin tolerates a sulfonated oil, as evidenced by absence of the objectionable features that have been discussed, I have recommended the use of undiluted sulfonated neat's-foot oil. Purchased in gallon lots it is less expensive than is a proprietary preparation containing a sulfonated oil. In addition to its use as a hand cleanser, I have recommended that about 2 cupfuls be placed in a tub of water with 1 pound (450 Gm.) of laundry starch. This mixture is desirable for use by persons with a dry skin, especially for bathing in the winter months. If the patient is a workman who requires an abrasive soap, I have advised adding sufficient cornmeal to plain sulfonated neat's-foot oil to make a mush, thus affording a nonalkaline abrasive cleanser.

Dr. Herman Sharlit, New York: As I understand it, the objections to soap—when there are objections—are, first, that it dries the skin, in other words, that it is too good a cleanser, and, secondly, that in some cases the necessity for soap in solution to be a little alkaline is the possible basis for an irritative reaction. I think before one decides to discard soap and recommend cleansing oils on these two grounds, one ought to see what can be done about soap to overcome those two deficiencies.

There is a profound psychologic objection on the part of patients to cleansing themselves with oils. Superfatted soap does a good job if it is effectively superfatted. The added oil acts to make the emulsion of the soap and oil in water still neutral or, possibly, a little acid; so one is not dealing with any alkalinity. Secondly, it supplies an added oil, and when the detergent action is over the skin is still slightly moist, slightly greasy and not dried out.

If you will go to your soap maker and insist that you know that vegetable oil can be put into soap to the extent of 10 per cent and a cake can still be made, you will get a satisfactory superfatted soap. I have used peanut oil, which I think is excellent. Ten per cent peanut oil put into soap gives a product that lathers beautifully, cleanses excellently and leaves the skin soft and pliable. I think this product would overcome many of the objections to soap. Certainly, the patient will be more grateful for a cake of satisfactory soap than for some oil.

Strangely enough, the objection to soap would probably be upset if dermatologists visited the Skin and Cancer Unit of the New York Post-Graduate Medical School and Hospital, for they would see many patients looking as if they were calcimined. These patients are painted, with a brush, with a mixture that is called Burrow's emulsion. This emulsion contains, among other things, solution of calcium hydroxide and olive oil. When solution of calcium hydroxide and olive oil are mixed, calcium soap is formed; so these patients have a superfatted soap painted on them. It is one of the pet remedies in the hospitals.

DR. JAMES HERBERT MITCHELL, Chicago: It seems to me that the discussion proves that "one man's meat is another man's poison." My experience has been exactly that of Dr. McCarthy. After hearing the paper of Drs. Klauder, Gross and Brown [1b] at Montreal, Canada, I returned home and had a great many preparations made up and gave them to the head of the medical department of a large industrial plant. The esthetic qualities of the preparations did not suit the workmen of this plant in the least. I have not yet found any one with a housewife dermatitis or with the winter type of dermatitis who has been able to use the preparations under discussion.

Some time ago I had as a patient a housewife, a mother whom I had seen a few times, whose dermatitis I had fortunately managed to clear up. I gave her one of these preparations. The first few times she used it her dermatitis was back again.

Soap is produced by the reaction of a fatty acid with an alkali. One of the few fats to combine with an alkali in the cold is coconut oil, but the reaction requires a long time. All soaps hydrolyze in water and liberate alkali. This can be demonstrated by dissolving soap in alcohol and adding phenolphthalein. No color change occurs, but if water is added immediately a deep red is seen. I am at a loss to understand how the alkali necessarily liberated by hydrolysis can be saponified in the cold by the superfatting. Unless the added fat is saponified in the cold nothing is accomplished.

DR. C. GUY LANE, Boston: I am much interested in the varying expressions of opinion with regard to preparations of sulfonated oils. I think there are valid objections to their use. One of the objections is cost, which has already been mentioned. These preparations are distinctly more expensive at present. I think there is an objection for psychologic reasons, perhaps to the oily sensation, perhaps to the lack of lather and perhaps to the liquid form. The more frequent use of liquid soap dispensers and soap in liquid form perhaps tends to minimize the last objection.

Another item to consider is the fact that frequently patients come back, particularly patients who give a history of soap irritation, who not only have been using the liquid sulfonated oil according to directions but, in addition, have been using soap as well, taking baths in soap, thus coming in contact with the alkali and perhaps specific fatty acids which are also found to cause trouble. Extremely careful directions should be given to the patient with reference to the procedure to be followed, especially if he happens to be in the group of persons who give a history of symptoms associated with the use of soap.

I was interested in Dr. Osborne's comment with reference to surgeons. Several surgeons at the hospital have had irritations associated with the scrubbing process. A number of these have been relieved almost entirely by the use of a sulfonated oil preparation plus care with reference to the use of soap in bathing.

Our experience with bacteriologic investigation has shown that there is apparently no reduction in the bacteria on the skin following the use of a sulfonated oil

preparation. So far as the use of this preparation in the treatment of acne has been concerned, my experience has not been as satisfactory as that of some of the discussers.

For scalps, I will not say much about the long-haired women in the summer, as mentioned by Dr. McCarthy, but, certainly, in the short-haired group and in men sulfonated oil has been the agent par excellence for use in removal of ointments. In fact, the nursing staff has been particularly enthusiastic with regard to its use for scalps. Several have adopted it for their own use, following the experience in our dermatologic ward.

With regard to Dr. Klauder's suggestion for the use of plain sulfonated oil and cornmeal, this mixture has proved satisfactory in some cases, particularly for conditions of industrial origin. I should be interested in the addition of the peanut oil to a superfatted soap, provided one can be sure that the fatty acids produced from peanut oil do not have the possibility of causing irritation.

XCVI. TREATMENT OF LUPUS ERYTHEMATOSUS WITH BISMARSEN

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The treatment of the discoid type of lupus erythematosus with gold salts has not been entirely satisfactory. For example, Rutledge [1] in 1931 in reporting 56 cases stated that in 30 the condition was improved and in 18 arrested. Wright [2] in 1936 reported a series of 76 patients treated by this method, of whom 37 per cent were regarded as cured, 34 per cent as almost cured or greatly improved and 17 per cent as moderately or slightly improved; 12 per cent failed to respond favorably. He also stated that 17 per cent of the 76 patients suffered one or more relapses after being partially or entirely free from lesions and that 24 per cent of the patients suffered a reaction of one type or another from the gold treatment. In the same year Alden and Jones [3] reported that in 33 per cent of their cases the disease was arrested or cured and in 50 per cent improved. They further stated that the "margin of profit" in treatment did not seem to be great. Callaway and Stokes [4] in 1938

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The bismarsen used in this investigation was supplied by the Dermatological Research Laboratories, a division of the Abbott Laboratories.

Studies, observations and reports from the Dermatological Departments of the Barnard Free Skin and Cancer Hospital and Washington University School of Medicine, service of Dr. M. F. Engman Sr.

1. Rutledge, W. U.: Lupus Erythematosus, Arch. Dermat. & Syph. **23**:874-883 (May) 1931.

2. Wright, C. S.: Ten Years' Experience in the Treatment of Lupus Erythematosus with Gold Compounds, Arch. Dermat. & Syph. **33**:413-429 (March) 1936.

3. Alden, H. S., and Jones, J. W.: Lupus Erythematosus, J. A. M. A. **107**: 1203-1207 (Oct. 10) 1936.

4. Callaway, J. L., and Stokes, J. H.: Relapse in Lupus Erythematosus After Treatment with Sodium Gold Thiosulfate, Arch. Dermat. & Syph. **37**:627-630 (April) 1938.

reported that 74 per cent of a series of 31 patients had relapses after treatment, and in 1940 O'Leary [5] stated that intravenous gold therapy produced a cure in 30 per cent of the patients with the chronic discoid type and that in another 30 per cent material improvement was obtained. He stated further that complications from the treatment are serious and sometimes fatal, on account of generalization, exfoliative dermatitis or an uncontrollable blood dyscrasia.

Since Schamberg's introduction of the use of gold sodium thiosulfate, it has been recognized that the disease may yield to treatment not only with gold salts but with other heavy metals. We have seen the condition clear up in a number of cases from the use of bismuth salicylate, sodium or potassium bismuth tartrate, acetarsone [6] and even arsenic trioxide, in the form of "asiatic capsules." In searching for other remedies that might be more effective, we felt that the use of heavy metals in combination might be worthy of a trial, and therefore we selected a familiar combination of arsenic and bismuth, bismuth arsphenamine sulfonate (bismarsen).

A disease which usually is not dangerous calls for circumspection in the application of treatment. This is doubly true when the contemplated therapy involves the use of dangerously toxic drugs. We recognize that patients with a disfiguring disease, such as the discoid form of lupus erythematosus, demand relief not only for cosmetic reasons but for obvious economic reasons.

We are reporting on a series of 28 patients with discoid lupus erythematosus whom we have treated with bismarsen. Each patient was given a thorough physical examination, and only those were selected who we felt would be able to tolerate the treatment. The contraindications for the use of bismarsen are stated to be cachexia, severe anemia, endocrine disturbances, advanced tuberculosis of the lungs, cardiac insufficiency, hemorrhagic disease, epilepsy and alcoholism. We regard severe renal dysfunction also as a contraindication.

The dosage employed was as follows: The tolerance of the patient was tested by giving 0.05 Gm. of the drug twice weekly for one week. The dose was then raised to 0.1 Gm. twice weekly, and in many cases after the drug was found to be well tolerated the dose was raised to 0.2 Gm. twice weekly. All injections were given intramuscularly with the usual precautions necessary.[7]

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5. O'Leary, P. A.: Prognosis and Treatment of Lupus Erythematosus, Proc. Staff Meet., Mayo Clin. **15**:686-688 (Oct. 23) 1940.

6. Volk, R.: Behandlung des Lupus erythematodes mit Spirocid, Wien. klin. Wchnschr. **44**:1481 (Nov. 30) 1931.

7. Conrad, A. H.; Conrad, A. H., Jr.; Mapother, P., and Weiss, R. S.: Lichen Planus Treated with Bismuth Arsphenamine Sulfonate, South. M. J. **33**: 727 (July) 1940.

REPORT OF CASES

CASE 1.—S. A., a white woman aged 29, was admitted to the clinic June 26, 1939 because of an eruption on the face and chest of two months' duration. Her history indicated that from 1933 to 1936 she was under treatment for active tuberculosis and that on Sept. 8, 1936 she was discharged with the condition arrested. Six weeks after the birth of her last child (March 1939) a rather extensive eruption developed on her face and chest.

Examination in June 1939 disclosed many dull red patches, irregular in outline and ranging in size from tiny plaques to areas 4 to 5 cm. in diameter. The face, ears, scalp and upper part of the chest were involved. The plaques were slightly elevated and scaly and showed dilated follicular orifices.

The general physical examination showed no abnormalities with the exception of dental caries. A roentgenogram revealed numerous millet seed–sized areas of calcification in the upper half of each lung, mildly suggestive of previous miliary spread but inactive at present. No evidence of active pulmonary tuberculosis could be demonstrated. The electrocardiogram was not significant. The hemoglobin estimation was 70 per cent; the erythrocytes numbered 3,370,000 and the leukocytes 6,800, with 57 per cent polymorphonuclear neutrophils and 43 per cent lymphocytes. Subsequent leukocyte counts ranged from 7,350 to 9,050. The urine was normal. The Kahn reaction was negative. Examination of the sputum failed to reveal tubercle bacilli.

Treatment with bismarsen was started on Jan. 26, 1940. She was given 0.2 Gm. of the drug in three weeks, and she then contracted influenza. She resumed treatment on March 5, and up to August 13 she had received a total amount of 3.35 Gm. In April there was definite improvement, with a decided decrease in the erythema and scaling. In May she had a severe bronchitis and discontinued treatment for two weeks. On August 13 it was noted that no apparent improvement of the lesions had taken place during the previous two months. She complained of tachycardia and amenorrhea since April and of much bloating and gastric distress. Examination disclosed that she was approximately four months pregnant.

She left our observation from August 13 to December 5. During this interval she had two pulmonary hemorrhages. On December 3 the lesions on the face and chest were pronounced. She received no benefit from the treatment and was apparently a bad subject for this type of therapy.[8] The patient was referred to the Washington University obstetric department for immediate care.

CASE 2.—M. B., a white woman aged 31, was first seen on Aug. 12, 1926, because of lupus erythematosus of two years' duration, confined to the bridge of the nose and the right cheek. At that time she received applications of solid carbon dioxide at irregular intervals up to Jan. 4, 1937, with slight improvement. She was then given two roentgen ray treatments. She was not seen again until two years later, at which time she had a recurrence on the tip of the nose. Her blood was normal and remained so. She was treated with bismarsen and up to May 24, 1939 had received a total of 3.2 Gm. At this time decided improvement was noted. She was then given 60 mg. of gold sodium thiosulfate in three divided doses. She was not seen until Sept. 10, 1939, at which time there was atrophic scarring of the right cheek. The lesion on the tip of the nose was still present. She refused to continue treatment. On Dec. 3, 1940 examination showed patches

8. It is of interest to note that this patient is the only one we have ever seen who had lupus erythematosus and active pulmonary tuberculosis at the same time.

on the external meatus of both ears, extending into the canal. There was a trace of the eruption on the posterior surface of the ear. The lesion on the tip of the nose was stationary.

Case 3.—P. E. D., a Negress aged 27, was admitted to the clinic May 10, 1940 because of an eruption on her face of fifteen years' duration. She presented characteristic lesions of lupus erythematosus with some atrophy on the face. The general physical examination gave essentially negative results. Examination of the blood showed hemoglobin, 67 per cent; red cells, 4,020,000, and white cells, 9,300, with 64 per cent neutrophils, 2 per cent eosinophils and 33 per cent lymphocytes. Subsequent leukocyte counts ranged from 5,550 to 10,800. The Kahn reaction was negative. Roentgenograms of the chest showed no evidence of active tuberculosis. Treatment with bismarsen was started on May 14, 1940, and up to August 23 she had received a total amount of 1.9 Gm. The lesions gradually improved and by August 23 were completely cleared. She received an additional

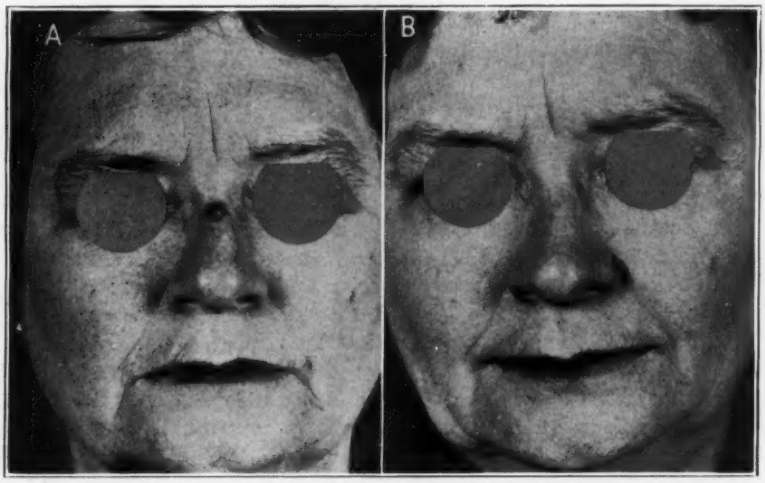

Fig. 1 (case 4).—Lupus erythematosus: (*A*) before treatment and (*B*) after two months of treatment.

1.3 Gm. as a precautionary measure, and when she was examined on December 3 there was no recurrence of the disease. Atrophic scarring and pigmentation were the end results.

Case 4.—M. F., a white woman aged 38, was admitted to the clinic on July 18, 1933 because of a small erythematous lesion on the tip of the nose of three weeks' duration. A diagnosis of lupus erythematosus was made. The general physical examination and roentgen ray examination of the chest showed no abnormalities. Her leukocyte counts ranged from 4,150 to 7,200. The Kahn reaction was negative. She was given gold sodium thiosulfate, and during the next four years she received a total of 430 mg. The lesion healed. On Aug. 23, 1940 she was readmitted because of a recurrence of the lupus erythematosus. The lesion was located on the bridge of the nose and was increasing rapidly in size. On September 13 bismarsen therapy was started. She received a total of 1.4 Gm., and on March 14, 1941 the lesions had undergone complete involution, leaving no evidence of the disease (fig. 1).

CASE 5.—J. G., a white woman aged 38, was admitted to the clinic April 22, 1940 because of an eruption on the face of one year's duration. She stated that it had begun on the right eyelid as a purple, itchy spot. It later spread over the cheeks, neck and exposed areas of the chest and arms. During this time she was treated by a local doctor with ultraviolet radiation and was taking large amounts of barbiturates. Examination showed an erythematous eruption on both cheeks, forehead and exposed parts of the chest. The lesions were raised and edematous. The general physical examination disclosed no abnormalities. The urinalysis disclosed a slight reaction for albumin. Examination of the blood showed: hemoglobin, 80 per cent; red cells, 4,540,000, and white cells, 3,300, with 71 per cent polymorphonuclear neutrophils and 21 per cent lymphocytes. Subsequent leukocyte counts ranged from 3,400 to 6,400. The Kahn reaction was negative. Roentgen ray examination showed evidence of an old healed childhood tuberculosis. No signs

Fig. 2 (case 5).—Lupus erythematosus: (*A*) before treatment and (*B*) after three and one-half months of treatment.

of active tuberculosis could be found. Histologic examination of a lesion on the forehead showed changes consistent with a diagnosis of lupus erythematosus. Treatment consisted of the withdrawal of administration of all barbiturates and the injection of 0.1 Gm. of bismarsen twice weekly. After she had received 0.5 Gm. the lesions on the forehead were definitely improved. After receiving 1.2 Gm. she complained of general pruritus and nausea. Ascorbic acid, 150 mg., was given daily, with prompt relief of the subjective symptoms. The lesions improved rapidly, and after a total of 1.7 Gm. of bismarsen was given they completely cleared. At that time (July 9, 1940), three months after admission, she complained of pain in the right lower quadrant and menorrhagia. Gynecologic consultation was obtained, and a mass was found in the right adnexal region. She was admitted to the surgical department, and a hysterectomy was performed. The pathologic diagnosis was adenocarcinoma of the corpus uteri.

On Sept. 10, 1940 the lesions on her face had cleared except for two erythematous spots, on the tip of the chin and the nose. She was given 0.05 Gm. of bismarsen weekly, and on December 9 the lesions had healed entirely. When she was examined on March 14, 1941 no evidence of the disease could be found except slight atrophy (fig. 2).

Case 6.—R. H., a white woman aged 39, was admitted to the clinic Oct. 2, 1939, complaining of an eruption on the face which began twelve years prior to admission. It started as a red scaly spot on the left cheek, which enlarged by peripheral extension. Two years later a similar lesion developed on the right cheek and right temple. The lesions were erythematous scaly plaques with sharply defined borders. The follicular openings were enlarged. Telangiectasia was present. The general physical examination showed no abnormalities. Roentgenograms of the chest disclosed bronchiectasis, saccular in nature, in the inferior portion of the right lung. The blood counts showed a moderate secondary anemia, and the urine gave a slight reaction for albumin. The Kahn reaction was negative.

She was given 0.05 Gm. of bismarsen on Oct. 10, 1939, and three days later the dose was increased to 0.1 Gm. On November 3 she complained of chill, fever, pain in the chest and coughing; therapy was postponed until November 14, at which time she had recovered from her infection. She received a total of 1.35 Gm. of bismarsen up to Feb. 9, 1940. The eruption showed a decided improvement. The white blood cell counts varied from 5,700 to 8,300.

On Sept. 14, 1940 the patient wrote that she had to discontinue treatment for financial reasons. The lesions had almost cleared, but the condition had relapsed when we heard from her.

Case 7.—J. A. H., a white man aged 47, was first seen April 12, 1937 because of an eruption on his face of four years' duration. Examination showed an extensive and typical hypertrophic type of lupus erythematosus eruption on the cheeks, nose, ears and neck. There were a moderate amount of pigmentation in some areas and atrophy in others. General physical examination showed several infected teeth and a moderate prostatitis. The blood counts and the urine were normal. Subsequent leukocyte counts during bismarsen therapy ranged from 5,600 to 13,050. The Kahn reaction was negative. Histologic examination showed changes typical of lupus erythematosus.

Treatment was started April 12, 1937 and consisted of intravenous injections of gold sodium thiosulfate at weekly intervals. From this date to May 1, 1939 he received a total of 1,342 mg. with no apparent benefit. The medication was then changed to bismarsen, and from May 1 to April 20, 1940 he received a total of 4.6 Gm. There was little improvement, and fever therapy was instituted. He received typhoid vaccine intravenously on April 20, April 28, May 5, May 12 and May 19, and on each occasion he had a chill and a fever, with a temperature ranging from 100 to 103 F. From May 20 to Dec. 3, 1940, he received a total of 3.8 Gm. of bismarsen, and during this time he showed decided improvement.

On December 3 the examiner made the following note: "Most of the thick, horny plaques showed complete involution, leaving atrophic scars. There still remain small patches, varying from 0.5 to 2 cm. in diameter, on the ears and neck, with a few on the face. Results, while not complete, have been excellent. There is reason to believe that complete involution of the lesions will be obtained."

Case 8.—E. H., a white woman aged 37, appeared in the clinic on March 10, 1937, complaining of a spot close to her left eye, which had become larger during the past year. Examination disclosed a red, circular lesion on the side of the nose close to the inner canthus of the left eye. The edge was raised and the center

depressed and covered with a tenacious scale. The follicles were patulous. The examiner made a diagnosis of lupus erythematosus but suggested the possibility of tertiary syphilis. The reaction to a Kahn test was positive on four occasions. She was given mixed treatment. No improvement was noticed after three months of therapy.

Histologic examination showed changes characteristic of lupus erythematosus. The general physical examination showed no abnormalities except a chronic duodenal ulcer. She was given intravenous injections of gold sodium thiosulfate and received 115 mg. in two months. Acetarsone was then prescribed. The lesions did not improve. Because of sensitivity to neoarsphenamine and mapharsen, she received weekly injections of a solution of bismuth phthalate in olive oil, for the treatment of syphilis. Solid carbon dioxide was then used on the cutaneous lesion, and some fading was noticed.

On Jan. 8, 1940 she returned to the clinic, stating that the lupus erythematosus had cleared up completely following the use of solid carbon dioxide but had relapsed during the preceding three months. Treatment with bismarsen was started on Jan. 15, 1940, and up to April 17 she had received 0.9 Gm. She disappeared from observation until August 20, at which time she had a total recurrence. The administration of bismarsen was again started on August 27, and up to December she received a total dose of 1.2 Gm. The lesions began to clear up after the the fourth injection, and on December 3 they had completely disappeared, leaving thin, pitted and pigmented areas of atrophy.

The white blood cell count ranged from 6,550 to 10,950. No recurrence was observed when the patient was examined four months later. At the time of writing the patient is still receiving small doses of the drug.

CASE 9.—F. H., a white woman aged 44, was admitted to the clinic Nov. 8, 1937 because of a lesion on her face of seven months' duration. She had had six roentgen treatments before coming to the clinic.

Examination disclosed erythematous patches, which were slightly raised and showed some follicular dilatation. The lesions were scattered over the chin, and there was some telangiectasia on both cheeks. The blood counts and urine were normal. Histologic examination showed changes characteristic of lupus erythematosus. The therapy consisted of application of calamine lotion to the lesions and administration of acetarsone. This treatment was continued to May 8, 1939. The lesions on her face improved considerably during this period. Then new lesions of lupus erythematosus were noticed on the scalp. These gradually increased in size, and bismarsen therapy was started May 22, 1939. From then to February 1940 she received a total dose of 3.6 Gm., and all of the lesions completely cleared.

In June 1940 a small lesion developed on the tip of the nose, which was suggestive of a recurrence. After receiving an additional 0.25 Gm., she became nauseated, vomited and had fever. No evidence of jaundice was observed. Therapy was discontinued. The lesion on the tip of the nose gradually improved, and when she was observed on December 2 it had completely disappeared. During the course of her therapy, the white blood cell count varied from a high of 12,650 to a low of 5,450. Recurrence of the disease on the scalp was observed five months later.

CASE 10.—J. H., a white man aged 33, was admitted to the clinic Oct. 24, 1939 because of an eruption on his face of six months' duration. He had had no previous treatment. Examination revealed on the nose and left cheek sharply defined, roughly circular raised red plaques with dilated follicles and follicular plugging. The results of a general physical examination were normal. The

hemoglobin estimation was 85 per cent, the red blood cell count 4,180,000 and the white blood cell count 6,500, with 66 per cent polymorphonuclear neutrophils, 32 per cent lymphocytes and 2 per cent eosinophils. Roentgen examination of the chest showed no abnormalities.

Treatment with bismarsen was started October 27. He was given 0.1 Gm. twice weekly. After the seventh injection he was greatly improved. He received a total dose of 2.45 Gm. up to Feb. 23, 1940. The lesions continued to improve. The last white blood cell count, made Dec. 2, 1939, was 7,900. The patient disappeared from observation in February 1940.

CASE 11.—E. H., a white woman aged 41, was admitted to the clinic on May 31, 1939, with a history of having had an eruption on the face since August 1938. Examination showed reddish infiltrated plaques covered by adherent scales with a typical butterfly distribution on the face. There was a large plaque located on the forehead, and smaller ones were found anterior to both ears. The general

Fig. 3 (case 11).—Lupus erythematosus: (*A*) before treatment and (*B*) after six months of treatment.

physical examination showed no abnormalities. Roentgen examination of the chest showed changes suggestive of incipient tuberculous lesions, which were apparently arrested and did not indicate any definite infiltrative progression. The results of blood counts and urinalysis were within normal limits. The Wassermann reaction of the blood was negative. Histologic examination on June 5, 1939 showed changes characteristic of lupus erythematosus. Treatment consisted of intramuscular injections of bismarsen given twice weekly. The first dose of 0.1 Gm. was given July 11, 1939, and by August 18 she had received a total of 0.8 Gm. At this time the lesions were decidedly improved and less obvious. The drug was well tolerated, and the dose was increased to 0.2 Gm. By September 26 the lesions had entirely disappeared, after she had received a total dose of 1.8 Gm. of bismarsen. The follow-up treatment consisted of weekly injections of 0.05 Gm. for ten weeks. She was last observed Sept. 10, 1940, and there was no recurrence (fig. 3).

CASE 12.—V. H., a white man aged 27, was admitted to the clinic Aug. 21, 1939 because of an eruption on the face of six to seven years' duration. Examination showed lesions typical of lupus erythematosus on both cheeks, with some atrophy. General physical examination and urinalysis showed no abnormalities. Blood counts through some oversight were not made. A roentgenogram of the chest was normal.

Treatment was started August 25, with an initial dose of bismarsen of 0.1 Gm. After the patient had received 0.4 Gm. the dose was increased to 0.2 Gm. twice weekly. By September 18 the lesions were showing a tendency to fade, and by October 20 they were definitely improved. The patient discontinued treatment Jan. 10, 1940, after he had received 3.7 Gm. of bismarsen. At that time the improvement was marked.

CASE 13.—E. H., a white woman aged 32, was admitted to the clinic May 26, 1924 because of an eruption on the face of two years' duration. A diagnosis of lupus erythematosus was made, and treatment with solid carbon dioxide was recommended. In September 1928 she was seen with another attack involving areas adjacent to the old healed lesion. Gold sodium thiosulfate was given until December of that year, when exfoliative dermatitis developed. The total amount of gold sodium thiosulfate given in this period was 940 mg. She was immediately hospitalized and discharged two weeks later decidedly improved. She was observed at frequent intervals, and no recurrence was noted until Nov. 11, 1939. This apparently followed a severe sunburn suffered three months previously. Gold sodium thiosulfate was again administered, and after a total dose of 175 mg. involution of the lesions was noted. In October 1940 there was a slight recurrence on the bridge of the nose. At this time the physical examination, roentgenogram of the chest, blood counts and urine were normal and reactions to Kahn tests were negative. She was given bismarsen and by December 3 had received 1.1 Gm. Disappearance of the lesion was noted on the last examination. Her leukocyte counts ranged from 5,450 to 9,500. When she was last seen, on March 14, 1941, her lesions had undergone complete involution.

CASE 14.—F. J., a Negress aged 17, was admitted to the clinic on Nov. 6, 1939 because of an eruption on the face of five years' duration. The lesions were confined to the cheeks and the nose. They were slightly raised, had pinkish red borders and showed some atrophy. The general physical examination showed no abnormalities. Examination of the blood showed a hemoglobin content of 75 per cent, a red blood cell count of 4,260,000 and a white blood cell count of 5,850, with a differential count of polymorphonuclear neutrophils 63 per cent and lymphocytes 37 per cent. The urinalysis showed a slight reaction for albumin. The reaction to a Kahn test was negative. It was thought in the beginning that the lesions were those of tertiary syphilis, and she was given mixed treatment. A repetition of the Kahn test gave a negative reaction. Because no improvement took place with this treatment, a biopsy was done on November 21. The histologic picture was characteristic of lupus erythematosus. She was placed on bismarsen therapy December 12 and up to April 19, 1940 had received 2.1 Gm. The lesions improved rapidly. She moved from the city the latter part of April and placed herself in the hands of her local physician, who continued with the treatment. She was seen November 1, at which time the lesions had completely disappeared.

CASE 15.—R. A. J., a white man aged 36, was admitted to the clinic on April 2, 1940 because of an eruption on the face and neck of three years' duration. The lesions were atypical of lupus erythematosus. The results of a general physical

examination were essentially negative. The urine was normal. The hemoglobin estimation was 90 per cent, the red blood cell count 4,620,000 and the white blood cell count 11,600, with a differential count of 67 per cent polymorphonuclear neutrophils and 33 per cent lymphocytes. Subsequent leukocyte counts ranged from 7,200 to 12,650. The reaction to a Kahn test was negative. Roentgen ray examination of the chest showed negative results.

On April 9 treatment with bismarsen was started. After he received 0.6 Gm. the lesions began to disappear, and after a total of 2.54 Gm. was given the lesions were healed. He left our observation from September 17 to December 3. At this time there were no lesions except on the chin, where two erythematous patches with slight scaling were present. The patient was seen three months later, and a few lesions were still present on the chin.

Case 16.—A. K., a white woman aged 32, was admitted to the clinic Jan. 19, 1932 because of an eruption on the face of six months' duration. There were several slightly raised scaly plaques 1 to 3 cm. in diameter showing patulous follicles. There were a few plaques on the side of the neck. The general physical examination revealed nothing of importance. The Wassermann reaction was negative. A roentgenogram of the chest was normal. On January 19 intravenous injections of gold chloride at weekly intervals were begun. During the next eight months she received twenty-nine injections. The lesions were slightly improved. She then received intramuscular injections of bismuth potassium tartrate three times weekly. The lesions cleared up by January 1933.

She was again seen Dec. 20, 1938 and stated that she had been free from the eruption for five years but that five weeks before admittance it had recurred. The lesions were present on the cheeks, on the back of the neck and in an area above and to the left of the sternum. They were slightly elevated, brilliantly red plaques, with diffuse borders, some with thick scales and some slightly crusted. Histologic examination showed changes characteristic of lupus erythematosus. Bismarsen therapy was begun Dec. 27, 1938, and she received 0.1 to 0.2 Gm. at weekly intervals. By Feb. 18, 1939, after she had received 1.3 Gm., the improvement was marked, and by April 21, after a total dose of 3.5 Gm., the lesions had disappeared.

She was seen July 10, 1940 with lesions on both legs characteristic of erythema induratum. The lupus erythematosus was clinically cured. On December 3 the latter lesions remained completely healed; those of the erythema induratum were evidenced by thickening of the skin of the involved areas.

Case 17.—M. K., a white woman aged 24, was admitted to the clinic on April 23, 1940 because of an eruption on the face of three to four years' duration. On examination there were multiple lesions of lupus erythematosus on the cheeks and nose; the patient also showed scattered lesions of acne over the face. The results of general physical examination were essentially normal. Roentgen examination of the chest showed no changes suggestive of tuberculosis. The hemoglobin estimation was 71 per cent. The red blood cell count was 3,650,000 and the white blood cell count 7,750, with 54 per cent polymorphonuclear neutrophils, 1 per cent eosinophils and 44 per cent lymphocytes. Subsequent leukocyte counts ranged from 4,100 to 7,750. The urine was normal. The reaction to a Kahn test was negative. Histologic examination of tissue from the right cheek showed changes characteristic of lupus erythematosus. On April 30 treatment with bismarsen was begun, and up to December 3 she had received a total of 3.75 Gm. She began to show improvement on May 21, after receiving 0.8 Gm., and by August 23 the

lesions had completely disappeared. She has been under constant observation, and on December 3 all lesions were entirely healed, leaving only slight atrophy.

CASE 18.—J. K., a white man aged 30, was admitted to the clinic Sept. 12, 1939 because of an eruption in front of the ears of seven years' duration, This eruption consisted of patches of slightly thickened, scaly plaques, sharply defined, with slightly atrophic centers. Histologic examination showed changes typical of lupus erythematosus. General physical examination showed no abnormalities. The reaction to a Kahn test was negative. The hemoglobin estimation was 85 per cent; the erythrocytes numbered 4,560,000 and the leukocytes 9,550, with 69 per cent polymorphonuclear neutrophils, 26 per cent lymphocytes, 3 per cent mononuclear leukocytes and 2 per cent eosinophils. Subsequent leukocyte counts ranged from 6,200 to 9,550. The urine was normal.

Treatment with bismarsen, 0.1 Gm., was begun on September 12. He was given 6.2 Gm. up to Dec. 6, 1940. At this time the lesion anterior to the right ear was fading. The lesion in front of the left ear was about one half of its original size and was healing with slight atrophy. The patient then disappeared from observation.

CASE 19.—E. L., a white man aged 48, was admitted to the clinic on Oct. 23, 1939, with the complaint of an eruption on the neck of five months' duration.

Examination disclosed on the right side of the neck a lesion 1.5 by 1 cm., purplish, raised and with a slightly irregular border. There was distinct atrophy in the center. There was a similar but smaller lesion over the angle of the right jaw.

On general physical examination he was found to have arteriosclerotic heart disease. Examination of the blood showed hemoglobin 80 per cent, red blood cells 5,020,000 and white blood cells 9,200, with a differential count of 65 per cent polymorphonuclear neutrophils, 34 per cent lymphocytes and 1 per cent eosinophils. Subsequent leukocyte counts ranged from 5,100 to 8,050. A roentgenogram of his chest was normal. Histologic examination of tissue from the lesion on the neck showed changes characteristic of lupus erythematosus.

On October 31 he received 0.1 Gm. of bismarsen, and this dose was given twice weekly. Improvement was noticed after the fourth injection. After a total amount of 2.5 Gm. was given the lesions were entirely gone. He had a follow-up treatment consisting of a series of ten injections of 0.05 Gm. of bismarsen at weekly intervals. His last injection was on July 16, 1940. During the course of treatment, he stated that he felt excellent, and he had gained 5 pounds (2.3 Kg.) in weight.

He has been observed at varying intervals since discontinuation of the treatment, and on Dec. 3, 1940 the lesions were still entirely well, having left thin areas of atrophy. The white blood cell counts varied from 5,100 to 9,200.

CASE 20.—H. P., a white woman aged 25, was admitted to the clinic Feb. 20, 1940 because of an eruption on the face of one year's duration. Examination showed typical lesions of discoid lupus erythematosus on the nose, left cheek and behind the ears. The lesions were erythematous and scaly and showed follicular dilatation and plugging. The general physical examination revealed nothing abnormal. The urine was normal. Examination of the blood showed hemoglobin 70 per cent, red blood cells 4,470,000 and white blood cells 6,850, with a differential count of polymorphonuclear neutrophils 65 per cent, eosinophils 3 per cent and lymphocytes 32 per cent. Subsequent leukocyte counts ranged from 6,200 to 10,300. The reaction to a Kahn test was negative. Treatment with bismarsen was begun

on February 27. By June 18 she had received 2.6 Gm. and the lesions had entirely disappeared. She was then given a follow-up treatment of 0.05 Gm. at weekly intervals.

She was seen on August 30, and the lesions were entirely healed, leaving the faintest possible atrophy (fig. 4).

Case 21.—M. P., a white woman aged 49, was admitted to the clinic Sept. 16, 1940 because of a lesion on the bridge of the nose of two months' duration. Examination showed a small (1 cm.) erythematous plaque, with slight scaling and definite follicular plugging. The border was sharply defined. The general physical examination, including a roentgen examination of the chest, showed no abnormalities. The reaction to a Kahn test was negative. Treatment with bismarsen was begun on September 16, and she received 0.1 Gm. weekly. After four weeks' treatment the lesion completely disappeared, and on December 3 no

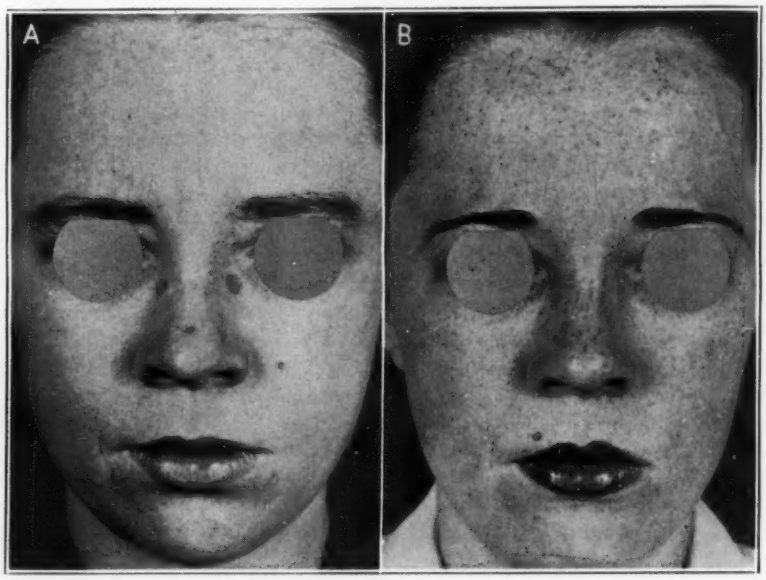

Fig. 4 (case 20).—Lupus erythematosus: (*A*) before treatment and (*B*) after six months of treatment (patient also has many freckles).

trace could be found. She received a total dose of 0.8 Gm. When she was examined six months later, no recurrence could be found. Examination of the blood at the start of treatment showed hemoglobin 72 per cent, red blood cells 4,500,000 and white blood cells 5,300, with 54 per cent polymorphonuclear neutrophils, 2 per cent eosinophils and 44 per cent lymphocytes. Subsequent leukocyte counts ranged from 4,800 to 7,250.

Case 22.—L. R., a white woman aged 23, was admitted to the clinic July 9, 1937 because of an eruption on the nose and forehead of one year's duration. She stated that she had had a similar eruption the previous summer, which had disappeared during the winter. Examination showed several erythematous patches with slight scaling and edema. She was not seen again until July 23, 1940, when she was admitted with a similar eruption on the ears, nose, cheeks and neck. Exposure to the rays of the sun had aggravated the lesions. The general physical

examination showed no abnormalities. Urinalysis showed a slight reaction for sugar. Subsequent urinalyses gave normal results. The hemoglobin amounted to 75 per cent; the red blood cell count was 3,970,000, and the white blood cell count was 9,500, with a differential count of 64 per cent polymorphonuclear neutrophils, 4 per cent eosinophils, 27 per cent lymphocytes and 5 per cent mononuclear leukocytes. Subsequent leukocyte counts ranged from 4,200 to 8,510. The reaction to a Kahn test was negative.

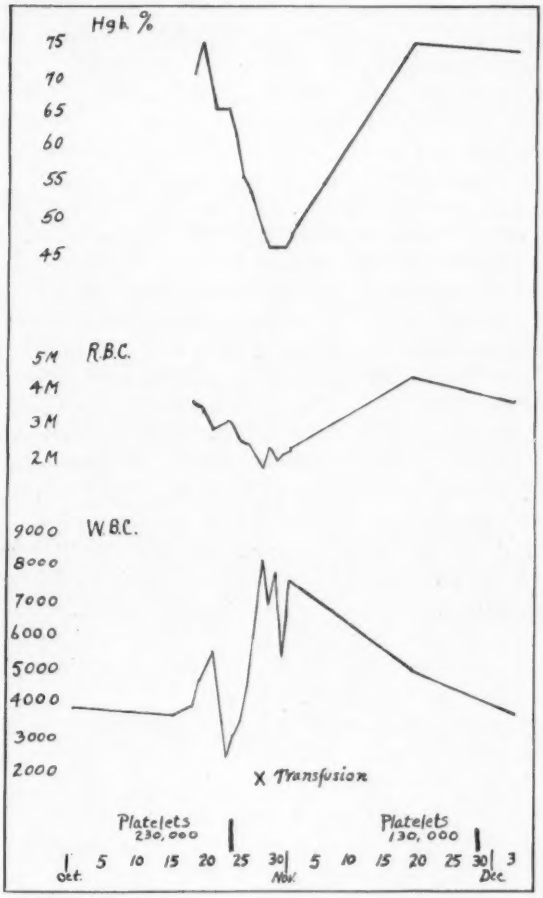

Fig. 5 (case 23).—Curves showing changes found in the blood of the patient with toxic purpura.

Treatment with bismarsen was started July 30, 1940, 0.1 Gm. twice weekly. On August 13 the lesions were much improved, and on December 3 there was a very thin red plaque on the nose near the inner canthus of the left eye, barely perceptible; the remainder of the lesions had disappeared. She received a total dose of 1.45 Gm.

CASE 23.—B. S., a white woman aged 26, was admitted to the clinic on May 6, 1940 because of an eruption on the face of three months' duration. Examination

showed on the nose and cheeks sharply circumscribed erythematous patches in a butterfly distribution. There was no scaling. There was slight patulousness of the follicles, with slight atrophy in some of the patches. It was the opinion of the examiner that the condition was the erythematous type of lupus erythematosus that is sometimes the precursor of a disseminated type. She was admitted to the hospital May 7 for further study. General physical examination showed nothing abnormal. Roentgen examination of the chest showed no evidence of pulmonary tuberculosis. The hemoglobin estimation was 84 per cent; the red blood cell count was 4,320,000 and the white blood cell count 6,750, with 69 per cent polymorphonuclear neutrophils, the 1 per cent eosinophils and 30 per cent lymphocytes. The urine was normal. The reaction to a Kahn test was negative. The patient was given absolute rest in bed, a high caloric diet and 15 cc. of cod liver oil three times daily. This treatment was continued for one month, during which time she gained 12 pounds (5.4 Kg.) in weight and the lesions became less acute and active.

On June 4 treatment with bismarsen was started, and up to October 15 she had received a total dose of 2.1 Gm. The face had become entirely clear by August 13. It was planned to continue treatment with injections of 0.05 Gm. of bismarsen for ten weeks as a precautionary measure.

On October 16 a severe toxic purpura developed and she was hospitalized for two weeks. During this time she had three profuse nasal hemorrhages with a resultant secondary anemia. Blood transfusions and liver and iron preparations were given. On October 23 the white blood cell count was 2,650 and the differential count was normal (fig. 5). The white blood cell count gradually improved and on October 30 was 7,950. She was observed at frequent intervals, and on Feb. 4, 1941 all the lesions had undergone complete involution.

Case 24.—F. T., a white woman aged 30, was admitted to the clinic May 25, 1936 because of an eruption on the face of three years' duration. Prior to admission she had had the following therapy: (1) silver nitrate applied locally; (2) five roentgen ray treatments; (3) applications of phenol followed by roentgen therapy; (4) eighteen injections of gold sodium thiosulfate, after which she had generalized peeling and itching; (5) applications of solid carbon dioxide, and (6) one month previous to admission ten injections of a bismuth compound and one intravenous injection of an unknown drug.

On examination typical lesions of lupus erythematosus on the cheeks and both sides of the nose were found. The general physical examination showed no abnormalities with the exception of a large ovarian cyst in the left side of the pelvis.

Examination of the blood showed a hemoglobin content of 75 per cent, a red blood cell count of 3,600,000 and a white blood cell count of 8,700. Subsequent leukocyte counts ranged from 8,250 to 11,450. The Kahn and Wassermann reactions were negative. A roentgenogram of the chest was normal.

Her therapy at this time consisted of local applications of calamine lotion and intramuscular injections of bismuth salicylate. Up to March 15, 1937 she had had a total of twenty-four injections, with no improvement. On August 13 injections of gold sodium thiosulfate were started, and up to Dec. 6, 1938 she had received a total of 0.725 Gm., with little or no improvement. From Jan. 10, 1939 to May 2, 1940 she received 0.25 Gm. of acetarsone by mouth daily for a total of 8.25 Gm. At this time the lesions were a little improved.

On May 2, 1940 treatment with bismarsen was begun; she was given 0.1 Gm. by injection twice a week, and one week later the dose was increased to 0.2 Gm. She received a total dose of 6 Gm. up to December 3. At this time the

lesions had undergone complete involution, leaving barely perceptible thin, white areas of atrophy. When she was observed four months later there was no recurrence.

CASE 25.—G. V., a white woman aged 39, was admitted to the clinic Aug. 9, 1938 because of lesions on the scalp and nose of one year's duration. Examination showed small erythematous, raised and scaly patches on the nose and a few superficial plaques on the scalp. She was given a mild ointment to apply locally and acetarsone. After two weeks she noticed a mild generalized itching, and use of acetarsone was discontinued. Quinine bisulfate, 1 Gm. daily, was prescribed, and its administration was continued for three months. The lesions of the scalp became worse, and on December 12 bismarsen therapy was started. After 0.8 Gm. was given the scalp was improved and the nose was clear. On Feb. 16, 1939, after 1.6 Gm. had been given, only a small patch along the hair line persisted, which cleared after a total dose of 2.4 Gm.

The patient then discontinued treatment for four months, and on May 2, 1940 several small patches of lupus erythematosus were discovered on the scalp. Resumption of treatment was advised, but the patient was extremely irregular in attendance. When last seen, Nov. 1, 1940, the lesions of the scalp were improved but not healed. She had received 1.4 Gm. of the drug from May to November. The treatment was continued, and on December 1 after receiving 0.2 Gm. of the drug the patient had a nitritoid reaction but made a prompt recovery. Treatment was then discontinued.

CASE 26.—E. W., a white woman aged 25, was admitted to the clinic July 20, 1937, with the complaint of an eruption on the face of nine years' duration. The disease had begun near the corner of the right eye and had spread over the right cheek across the bridge of the nose, involving the opposite cheek.

Examination disclosed a diffuse erythematous eruption with a "butterfly distribution" showing atrophy and follicular dilatation. The lower eyelids and lips were involved with the same process. General physical examination disclosed no abnormalities. The blood count and urine were normal. The Kahn reaction was negative. Roentgen examination of the chest showed no evidence of active pulmonary disease.

The patient lived a considerable distance from the clinic, and she was referred to her local doctor for treatment. This consisted of weekly injections of gold sodium thiosulfate, beginning with a dose of 10 mg. and increasing to 25 mg. as tolerated. The injections were continued for fifteen months with but little improvement. She was again seen on May 25, 1939 and was given 15 minims (1 cc.) of solution of potassium arsenite U. S. P. daily. Four months later a papular eruption developed on the lips, neck, arms and legs. The lesions on the lips, neck and arms were definitely lesions of lupus erythematosus.

She was sent to the hospital Sept. 25, 1939. The results of general physical examination, blood counts, urinalysis and roentgen examination of the chest were essentially normal. With rest in bed, cod liver oil and mild sedatives the lesions on the neck, arms and legs gradually improved and finally cleared up. On October 5, two weeks after admission, bismarsen therapy was started. The initial dose was 0.05 Gm., and it was repeated in four days. The dose was then increased to 0.1 Gm., and up to June 4, 1940 she received a total of 4.8 Gm. The lesions made a gradual but steady improvement, and when the patient was discharged, on June 4, the lesions were healed.

The results of six complete examinations of the blood showed that the hemoglobin varied from a low of 65 per cent to a high of 85 per cent. The red blood cell counts varied from 3,375,000 to 4,590,000, and the white blood cell counts, of which there were seventeen, from 5,500 to 10,600. The differential counts were normal. Six urinalyses were made, and all the results were normal. The patient appeared in the clinic four months later with a complete recurrence of her lupus erythematosus.

CASE 27.—Mrs. H. S. (private patient of Dr. A. H. Conrad), a white woman aged 46, a housewife, complained of an eruption on the face of six months' duration. She stated that she had had a similar eruption on the right side of the face about eighteen years previous to admission. This lesion was said to have disappeared after treatment with roentgen rays, and she remained free of all lesions until the appearance of her present eruption.

Examination disclosed typical lesions of lupus erythematosus on both cheeks and in front of the left ear.

She was given ten intramuscular injections of bismarsen biweekly and then nine injections weekly. The first injection, on Oct. 20, 1939, was of 0.1 Gm.; the next four injections were of 0.15 Gm., and all of the subsequent injections were of 0.2 Gm. After the fourth injection the glands on the left side of the neck became swollen, but they subsided in about a week. After twelve injections the smaller lesions had disappeared and the larger lesions seemed to be disappearing. Improvement continued, and on Feb. 16, 1940, after the nineteenth injection, all of the lesions had disappeared except a tiny area on the left cheek, leaving pigmented spots. The patient then disappeared from observation.

CASE 28.—J. Q. (private patient of Drs. Lane and Bagby), a white man aged 39, was first seen on Dec. 1, 1931, with typical lesions of lupus erythematosus on the nose, left cheek and scalp. He received treatment more or less regularly with many injections of a gold preparation, a few injections of a bismuth compound, freezing with solid carbon dioxide and sulfanilamide by mouth. All of this treatment was of little avail, and he continued to have new lesions. In 1939 he was given eight injections of bismarsen at weekly intervals, with some slight improvement, but his buttocks became so sore that the injections were discontinued. He was again treated with a gold salt, with only slight improvement. In September 1940 he was given six injections of bismarsen, and some of the lesions disappeared completely. However, when last seen, he still had some active lesions on the face and scalp.

CASE 29.[9]—Mrs. R. B. S. (private patient of Drs. Lane and Bagby) was first seen in June 1937 with an eruption on the face that had been present for two months. Examination revealed typical patches of discoid lupus erythematosus on the forehead and in the "butterfly" area of the cheeks and nose. Lesions were also present in the ears. There was a familial history of tuberculosis, but examination in the Barnes Hospital disclosed no active disease.

She was sent home to be treated with gold sodium thiosulfate by her family physician. She took this treatment for about a year and a half, and the eruption cleared up entirely but recurred as soon as the injections were stopped. She was also treated with solid carbon dioxide, and this too was followed by recurrence.

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9. This patient received only one injection of the drug, and the data are not included in the tabulation of results.

On March 8, 1940 treatment with bismarsen was started. She was given 0.1 Gm. of the drug, and twenty-five minutes later in a downtown restaurant she had a nitritoid reaction. After treatment with epinephrine she recovered rapidly from the nitritoid reaction, returned to her home and has not been seen since.

SUMMARY OF RESULTS OF TREATMENT

Complete Involution of the Lesions.—Case 3: Complete involution of the lesions occurred after three months' treatment, and no recurrence was observed when the patient was examined ten months later.

Case 4: Complete involution of the lesions occurred after three months' treatment, and no recurrence was observed when the patient was examined three months later.

Case 5: Complete involution of the lesions occurred after eight months' treatment, and when the patient was examined three months later no recurrence could be found.

Case 8: Complete involution of the lesions occurred after four months' treatment, and no recurrence was observed when the patient was examined four months later. The patient is still receiving small doses of bismarsen.

Case 11: Complete involution of the lesions occurred after two months' treatment, and no recurrence was observed when the patient was examined about one year after treatment was stopped.

Case 13: Complete involution of the lesions occurred after seven months' treatment, and no recurrence was observed three months after the lesions had disappeared. The patient is still taking treatment.

Case 14: Complete involution of the lesions occurred after six months' treatment, and no recurrence was observed when the patient was examined five months later.

Case 16: Complete involution of the lesions occurred after four months' treatment, and there was no recurrence when the patient was observed nine months later.

Case 17: Complete involution of the lesions occurred after four months' treatment, and no recurrence was observed six months later.

Case 19: Complete involution of the lesions occurred after two and a half months' treatment, and no recurrence was observed ten months later.

Case 20: Complete involution of the lesions occurred after four months' treatment, and no recurrence was observed when the patient was examined three months later.

Case 21: Complete involution of the lesions occurred after four weeks' treatment, and no recurrence was observed when the patient was examined six months later.

Case 23: Complete involution of the lesions occurred after four months' treatment. Severe purpura developed with numerous hemorrhages from the nose, but the patient made a complete recovery. When she was observed six months later there was no recurrence.

Case 24: Complete involution of the lesions occurred after seven months' treatment, and when the patient was observed four months later there was no recurrence.

Improvement of Lesions.—Case 2: Lesions on the nose almost disappeared after four months' treatment. Traces of the eruption were still present in the ears and on the tip of the nose when the patient was examined seven months later.

Case 6: An extensive example of the disease showed decided improvement. Treatment was discontinued for financial reasons as the patient lived at a distance. A letter from her stated that the disease had recurred.

Case 7: Severe hypertrophic condition showed marked improvement, but the treatment was fortified in this case by the use of fever therapy. The patient is still under treatment.

Case 9: Complete involution of the lesions occurred after nine months' interrupted treatment, and no recurrence was observed when the patient was examined three months later. Relapse occurred on the scalp after a further period of two months.

Case 10: Pronounced improvement was seen up to the time of the patient's disappearance from the clinic, four months after treatment was started.

Case 12: Definite improvement was evident after five months of treatment. The patient then disappeared from observation.

Case 15: Pronounced improvement was evident after five months' treatment. The patient was seen three months later, and a few faint lesions were still present on the chin.

Case 18: Moderate improvement was seen after three months' treatment.

Case 22: There was pronounced improvement after four months' treatment with only traces of the eruption left.

Case 26: The lesions showed complete involution after six months' treatment. When the patient reappeared four months later she had a total recurrence of the lupus erythematosus.

Case 27: There was almost complete involution of the lesions. The patient then disappeared from observation.

Case 28: There was some improvement; the facial lesions disappeared, but the lesions on the scalp remained after eight months of irregular treatment.

No Improvement.—Case 1: The patient became pregnant, and then active pulmonary tuberculosis developed and the treatment had to be stopped.

Case 25: There was practically no improvement. The patient took extremely irregular treatment. The treatment was discontinued on account of a nitritoid reaction.

COMMENT

Fourteen of a series of 28 patients treated with bismarsen made an apparent recovery. The lesions disappeared completely, often leaving atrophy, but no active inflammatory process could be observed when they were last examined.

Twelve patients showed improvement: 8 of them decided improvement and 3 of them moderate improvement. One patient cleared up entirely and then had a total relapse.

Two patients showed no improvement. One of them had pulmonary tuberculosis complicating pregnancy, and the treatment had to be stopped; the other one took the treatment irregularly.

Bismarsen has been responsible, in a number of reported cases, for blood dyscrasias. Therefore, we were very careful to make frequent blood counts. The white blood cell count was made at least once a week and in many of the cases twice a week. No prolonged decided effect was noticed on the leukocyte counts, and no agranulocytic tendencies were noted. In 5 cases the leukocyte count dropped below 5,000, the lowest being 2,650 in case 23 and 3,300 in case 5, the other three low counts being above 4,000. When the leukocyte counts dropped below 5,000 either treatment was discontinued or the dose was cut until the count rose to 5,000 or above. With the exception of the 1 case of purpura, no blood dyscrasia was encountered.

Local reactions were not troublesome. Although the patients usually complained of some pain after the first two or three intramuscular injections, they tolerated the subsequent ones well. One patient treated by a physician outside of St. Louis had a local sterile abscess, which we attributed to faulty technic.

Four patients had toxic reactions. One patient (case 5) had pruritus and nausea after receiving 1.2 Gm. of the drug. She was given large doses of ascorbic acid by mouth. The dose of the drug was cut down, but the treatment was continued, resulting in complete involution of the lesions of lupus erythematosus. Another patient (case 23) had toxic purpura after the treatment had been practically completed. She had several nasal hemorrhages and had to be given blood transfusions, but she eventually recovered from the purpura and her lesions remained completely well.

A private patient of Drs. Lane and Bagby had a nitritoid reaction twenty minutes after the first injection. As she received only one injection, she is not included in the tabulation of this series. One of our patients also had a nitritoid reaction with prompt recovery. It is necessary to emphasize that nitritoid reactions may occur after intramuscular injections of bismarsen. One patient became pregnant while taking bismarsen treatment, and active pulmonary tuberculosis developed. She had had pulmonary tuberculosis a number of years previously, but the disease had been pronounced arrested. It is possible that the combination of pregnancy and bismarsen treatment lighted up her quiescent tuberculosis.

One patient (case 7) with severe hypertrophic lupus erythematosus on treatment with bismarsen made little progress until he was given intravenous injections of typhoid vaccine for a few weeks. After the fever therapy he made considerable progress, and while decidedly improved he still has some active lesions.

One patient (case 13) treated with a gold salt had an exfoliative dermatitis, from which she recovered. Treatment with bismarsen caused no cutaneous reaction, and she made an apparent recovery from the lupus erythematosus.

Many of our patients were given ascorbic acid while they were undergoing this therapy. It is our impression that the administration of ascorbic acid is a material aid in the prevention of reactions to heavy metals.[10]

CONCLUSIONS

Bismarsen may prove to be of value in the treatment of discoid lupus erythematosus. More experimentation with the drug is necessary and many more patients must be treated before its use can be adequately evaluated.

Insufficient time has elapsed to permit one to draw any conclusions as to the permanency of the results obtained with this type of treatment.

Caution is necessary in the use of the drug. As with the use of gold, constant observation of the skin and frequent blood counts are necessary.[11]

Nitritoid reactions may occur; therefore, the patient should be observed for at least one-half hour after the drug is injected.

The significance of this report lies not so much in the results reported at this time but in the fact that a combination of heavy metals in the form

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10. Farmer, C. J.; Abt, A. F., and Aron, H. C. S.: Influence of Arsenicals, Bismuth and Iron on the Plasma Ascorbic Acid Level, Proc. Soc. Exper. Biol. & Med. **44**:495-499 (June) 1940.

11. Weiss, R. S.; Lane, C. W., and Bagby, J. W.: Effect on the Leukocytes of Therapy with a Gold Preparation, Arch. Dermat. & Syph. **35**:1074-1086 (June) 1937.

of a double salt may cause involution of the lesions of discoid lupus erythematosus. This fact may lead to further experimentation with other metals and other combinations of metals, leading perhaps to the discovery of less toxic and more effective drugs.

ABSTRACT OF DISCUSSION

DR. MARTIN F. ENGMAN JR., St. Louis: There is at present in Barnard Free Skin and Cancer Hospital a patient with an acute exfoliative dermatitis due to gold. A gold compound had been given to this patient elsewhere. Such cases are not infrequent, and one must consider gold a somewhat dangerous drug, even when given under the best and most careful conditions. In office practice and in the clinic I have been conservative in the use of gold. The dose has been 25 mg. of gold sodium thiosulfate intravenuosly once a week in cases of lupus erythematosus. This regimen has not given the satisfactory results in this disease that could be desired. It seems likely that larger doses are indicated, but I am a little afraid of the risk.

The work of Drs. Weiss, Conrad, Conrad and Pfaff has offered treatment for lupus erythematosus which apparently is safer than gold and perhaps nearly as useful. I have used bismarsen in a number of cases and have observed only 3 in which there were bad results from the treatment. In each of these cases there was a sterile abscess in the buttocks at the site of injection. I had not given the injections myself and so do not know whether the precautions the authors advise had been followed.

DR. JACOB HYAMS SWARTZ, Boston: Since the safety of the drug has been stressed, I should like to report a rare instance of complication from bismarsen, in which postmortem examination showed extensive fat metabolism involving particularly the lungs and the kidneys (ARCH. DERMAT. & SYPH. **33**:874-879 [May] 1936). I realize this example is a rare complication, but I mention it so that one can bear it in mind.

DR. RUBEN NOMLAND, Iowa City: The authors have stressed a search for a safe drug in the treatment of lupus erythematosus. However, they have had reactions from treatment. For many years I have been using bismuth subsalicylate in oil for the routine treatment of lupus erythematosus, and, I think, with excellent results. Of the last dozen patients I have treated, 8 had excellent results; 3 had good results but still continue to have their lesions after a considerable amount of treatment, and 1 had a poor result. However, there were a considerable number of relapses within a year. Four patients had relapses. Bismuth subsalicylate is probably as safe a drug as can be used. It is given in the same way and in the same dose as in the treatment of syphilis. I think probably the authors' good results are from the bismuth rather than from the arsenic contained in bismarsen.

DR. HENRY D. NILES, New York: I think the authors are to be congratulated on introducing bismarsen in the treatment of lupus erythematosus. They compared the effectiveness and the lack of toxicity of bismarsen with those of gold but not with those of bismuth. I agree with Dr. Nomland that the results obtained with a bismuth compound alone, e. g. plain bismuth subsalicylate, are excellent, and this bismuth compound has the added advantages that its administration is relatively painless compared with that of bismarsen and that it is safer to use and less expensive.

Seven years ago I reported a case of hemorrhagic purpura following the use of bismarsen in the treatment of syphilis (*Am. J. Syph. & Neurol.* **18**:300, 1934), and there have been some subsequent reports. I think that when there is an effective drug as innocuous, relatively, as bismuth subsalicylate one is hardly justified in using bismarsen, which may cause toxic effects.

DR. EARL D. OSBORNE, Buffalo: In regard to the use of bismarsen, if it can be proved that the results from its use are as good as those from the use of a gold compound, I believe it should replace gold. On the other hand, bismuth alone, I am convinced, is not nearly as effective as gold. In a series of 110 patients only 3 responded to bismuth and not to gold, whereas there were about 16 patients that responded to gold after a previous unsuccessful use of bismuth.

DR. RICHARD S. WEISS, St. Louis: I am afraid that my associates and I gave the impression that we advocate the substitution of bismarsen for gold in the treatment of discoid lupus erythematosus. We have not yet reached that stage. We think we have found another drug which causes a remission in many cases of lupus erythematosus, and we think it is worthy of further study. We have had only 1 serious reaction from the drug. In regard to what Dr. Nomland said about bismuth being safer and giving relatively as good results as gold, that has not been our experience at all. We have treated a large number of patients with bismuth subsalicylate and with soluble bismuth salts, giving the standard doses, as large as are safe, and we did not get the same kind of results as with gold therapy.

A point found out in the observation of these patients treated with bismarsen is that after the disease apparently disappears and the patient seems to be well we feel that it is necessary to keep up the treatment for a couple of months, with smaller doses—say, 50 mg. twice a week the first month and then once a week thereafter.

Dr. Niles remarked on the toxicity of gold in comparison with that of bismarsen. We have encountered a case of toxic purpura due to the latter drug and have knowledge of 2 nitritoid reactions. Bismarsen undoubtedly can produce toxic effects.

We found (and this work was not original) that the administration of ascorbic acid in relatively large doses was apparently an aid in treatment with bismarsen and seemed to help those patients that showed minor toxic effects from the bismarsen, such as nausea, vomiting and slight pruritus. We were bold enough to continue the treatment when slight pruritus was present, but we gave the patient large doses of ascorbic acid and were able to carry one.

This paper is in the nature of a preliminary report. We are going to keep the patients we have treated under observation. We shall treat others and give them nicotinic acid along with bismarsen. We shall also treat some with nicotinic acid alone. Therapeutic experiments of this kind are not entirely satisfactory because of the lack of controls. The only method we have is to compare results which we obtain with the different methods of treatment, and such comparisons are not entirely satisfactory.

THE KAHN VERIFICATION TEST

AN APPRAISAL OF THE TEST BASED ON CLINICAL AND SEROLOGIC EVIDENCE

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As is well known, there are no truly specific tests for syphilis. The lipoids employed in the various tests are not antigens in the strict biologic sense. They are, however, capable of producing reactions which are diagnostic of syphilis to a high degree. Even the antigen made of cultured spirochetes, of which so much was expected, although somewhat more sensitive, cannot at present be looked on as far more specific than tissue extract antigens.[1] All tests so far devised may give negative reactions in the presence of syphilis and positive reactions in its absence. While it is true that in most instances a positive serologic reaction is due to syphilis and perhaps represents a type of immunologic reaction, it is no less true that in some instances a positive reaction may be unrelated to the disease and represent a general biologic phenomenon. Stokes[2] enumerated about thirty nonsyphilitic conditions in the presence of which frequent or occasional false positive serologic reactions are obtained. These reactions are noted in leprosy (42 to 76 per cent positive reactions), in malaria[3] (8 to 19 per cent positive reactions) and also, although less commonly, in infectious mononucleosis, trypanosomiasis, scarlet fever, measles, acute lupus erythematosus, hemolytic jaundice and diseases of the upper respiratory tract, including pneumonia. Unquestionably, many a person has been stigmatized as syphilitic and given

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1. Beck, A.: J. Hyg. **39**:298, 1939. Eagle, H., and Hogan, R. B.: J. Exper. Med. **71**:215, 1940. Kahn, R. L.: J. Lab. & Clin. Med. **26**:139, 1940. Erickson, P. T., and Eagle, H.: Ven. Dis. Inform. **21**:31, 1940.

2. Stokes, J. H.: Modern Clinical Syphilology, ed. 2, Philadelphia, W. B. Saunders Company, 1934, p. 131.

3. Cumming, H. S., and others: (*a*) Ven. Dis. Inform. **15**:387, 1934; (*b*) Evaluation of Serodiagnostic Tests for Syphilis in the United States, J. A. M. A. **103**:1705 (Dec. 1) 1934; **104**:2083 (June 8) 1935; (*c*) Ven. Dis. Inform. **16**:3, 1935; (*d*) **18**:273, 1937.

treatment purely on the basis of a positive reaction occurring on routine examination in the course of or immediately following a nonsyphilitic disease. Routine prenatal and premarital tests must have enormously increased the number of persons now being needlessly subjected to therapy. Moore, Eagle and Mohr [4] have recently pointed out the difficulties of basing a diagnosis of syphilis on present serodiagnostic tests alone. Until such time when a truly specific test is devised for syphilis, the need for a procedure that can differentiate the false from the true reactions is only too obvious.

HISTORICAL REVIEW OF VERIFICATION TESTS

Soon after it was discovered that complement fixation and flocculation tests were nonspecific although characteristic of syphilis, attempts were made by many investigators to modify the tests so as to increase their specificity as well as their sensitivity. But to increase sensitivity, according to many serologists, only tends to reduce specificity, with resulting false positive reactions.

Already in 1921 Wassermann [5] described a method for the differentiation of true from false positive reactions. His confirmation test briefly described is as follows: In syphilitic serum there is present the Wassermann substance (reagin), which he regarded as a type of syphilitic antibody. This substance possesses the ability to combine with lipoid (antigen) to produce the Wassermann aggregate. The aggregate, he stated, could be split into its component parts of Wassermann substance and lipoid by filtration, the most suitable device for the filtration being a silicate filter.[6] In this process the antigen is retained by the filter while the Wassermann substance passes over to the filtrate. To one portion of the filtrate new antigen is added, and the remaining amount serves as a control. On addition of complement, amboceptor and sheep cells, the filtrate containing the new antigen will as a rule show a positive result, while the reaction of the control portion proves negative. Blood giving a false positive reaction in a similar experiment will not give a positive result. Wassermann stated the belief that by this procedure one could differentiate true from false positive Wassermann reactions in the majority of cases.

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4. Moore, J. E.; Eagle, H., and Mohr, C. F.: Biologic False Positive Serologic Tests for Syphilis: Suggested Method of Approach to Their Clinical Study, J. A. M. A. **115**:1602 (Nov. 9) 1940.

5. Wassermann, A. V.: Berl. klin. Wchnschr. **58**:9 and 193, 1921; Klin. Wchnschr. **1**:1101, 1922.

6. Citron, H.: Klin. Wchnschr. **1**:1102, 1922.

Witebsky [7] stated that Wassermann's observations could not be corroborated and suggested a confirmation test of his own. He expressed the opinion that the blood change occurring in syphilis is not a simple lability reaction but is caused by the formation of syphilitic antibodies. It is possible to regain the active syphilis substance as such in a practically protein-free state from the precipitate formed by syphilitic serum plus certain organic extracts. According to this method it is possible to distinguish the true immunologic reaction from the nonspecific lability reaction. His test is performed as follows: The serum under investigation is mixed with a certain amount of diluted tissue extract so that flocculation is obtained. The floccules are washed and suspended in saline solution at 55 C. After incubation, the test tube containing the floccules is centrifuged as quickly as possible. The supernatant fluid, he stated, contains the specific antibodies. This antibody solution reacts in the same way as the nonabsorbed native serum and can be used either in a flocculation or in a complement fixation test. He further stated that nonspecific reactions that are due to lability of the serum are not caused by antibodies and that the reaction of the supernatant fluid in such cases is negative.

Hecht, in a recent communication, expressed the opinion that Witebsky's test is too complex for practical use, and he suggested that his *Ballungsreaktion* [8] can be used as a confirmation test. D'Alessandro and Sofia [9] have not been able to differentiate positive serologic reactions obtained in typhoid fever and malaria from syphilitic reactions by means of the Witebsky test. It may be stated that none of these confirmation tests have apparently proved satisfactory.

THE KAHN VERIFICATION TEST

That variations in temperature have an influence on the results of flocculation tests has long been known.[10] In 1940 Kahn [11] described a differential temperature procedure to distinguish true from false serologic reactions. He reported that syphilitic serums behave differently

7. Witebsky, E.: Ztschr. f. Immunitätsforsch. u. exper. Therap. **80**:323, 1933; A Confirmation Test for the Serodiagnosis of Syphilis, Arch. Path. **26**: 1083 (Nov.) 1938.

8. Hecht, H.: Prag. med. Wchnschr. **39**:316, 1914; Deutsche med. Wchnschr. **47**:1487, 1921.

9. d'Alessandro, G., and Sofia, F.: Ztschr. f. Immunitätsforsch. u. exper. Therap. **83**:478, 1934.

10. Kahn, R. L.: Serum Diagnosis of Syphilis by Precipitate, Baltimore, Williams & Wilkins Company, 1925; The Kahn Test: A Practical Guide, ibid., 1928. Muckenfuss, R. S., and Ebel, E.: Am. J. Syph. **15**:391, 1931.

11. Kahn, R. L.: A Serologic Verification Test in the Diagnosis of Latent Syphilis, Arch. Dermat. & Syph. **41**:817 (May) 1940; Am. J. Syph., Gonor. & Ven. Dis. **25**:151, 157 and 162, 1941.

from nonsyphilitic serums when tested at various temperatures, as follows: 1. Serums from syphilitic persons giving positive serologic reactions to serodiagnostic tests show by a special procedure (verification test) a tendency toward marked precipitation at 37 C., with little or no precipitation at 1 C. 2. Serums from presumably nonsyphilitic persons and from apparently normal animals (rabbits, horses, cows, pigs and chickens) giving positive reactions to serodiagnostic tests show by the same procedure a directly opposite tendency, namely, marked precipitation at 1 C. and little or no precipitation at 37 C.

Kahn described three basic types of reactions with the verification test (table 1): 1. The syphilitic type, which occurs when precipitation is greater at 37 than at 1 C., usually corresponds to positive reactions (to serodiagnostic tests) associated with syphilis. 2. The general biologic (nonsyphilitic) type, occurring when precipitation is greater at 1

TABLE 1.—*Types of Reactions to the Kahn Verification Test*

Reaction to Test	Temperatures		
	37 C.	21 C.	1 C.
Syphilitic type	++++ or +++	++	+ to —
General biologic (nonsyphilitic) type	— or +	++	+++ or ++++
Negative type	—	—	—
Serum needs dilution for completion of verification test	+++ or ++++	+++ or ++++	+++ or ++++
Inconclusive results	++	++	++
	+	+	+
	—	++	—

than at 37 C., usually corresponds to positive reactions (to serodiagnostic tests) associated with nonsyphilitic conditions. 3. The negative type occurs when there is no precipitation at 1 or 37 C. and usually corresponds to negative serodiagnostic reactions. When the verification results are irregular so that they cannot be classified with any of these three types, the reactions are referred to as "inconclusive."

CLASSIFICATION OF SEROLOGIC RESULTS

In reporting serologic results it is customary to designate the reactions as —, +, ++, +++ and ++++. Owing to the employment of multiple tests, it was found expedient to report results according to the international rating, as follows (table 2): 1. If the reactions to all tests proved negative the results were designated as negative. 2. If the results of two or more tests proved doubtful or the average titer ranged from plus-minus to 2 plus, according to the standard designation, the reactions were reported as doubtful. 3. If the majority of reactions proved positive or the average titer 2 or 3 plus, according to the standard

designation, the reactions were reported as weakly positive. 4. If the reactions to all tests were strongly positive, they were designated as strongly positive.

No test can be of general value unless it can be performed by any well qualified serologist, and to limit the performance of any test to the originator necessarily greatly detracts from its value. We have therefore attempted to have the test duplicated in the laboratory of the department of health of the city of New York, under the personal supervision of

TABLE 2.—*Comparison of International and Standard Designations of Serologic Reactions*

International Designation	Standard Designation
Negative (—)	Negative (—)
Doubtful (±)	± to ++
Weakly positive (+)	++ and +++
Strongly positive (++)	++++ and over

TABLE 3.—*Patients Studied*

Syphilitic patients (all stages; treated)	349
Presumably nonsyphilitic patients (various dermatoses)	269
Questionable group	253
Patients with contagious diseases	
Scarlet fever	67
Measles	40
Varicella	12
Pregnant women	219
Patients with diseases with which occasional false positive serologic reactions are said to occur	
Pneumonia	31
Lymphogranuloma venereum	9
Carcinoma	3
Jaundice	8
Infectious mononucleosis	13
Miscellaneous diseases	
Leprosy	8
Malaria	16
Pinta	268
Total	1,565

Mr. John Koopman, a highly experienced and well informed serologist. Several hundred tests were made under his supervision, and the results will be reported in a subsequent communication.

MATERIAL STUDIED

The material studied (table 3) included blood from patients with syphilis of low and high serologic titer; from patients with various diseases with which false positive reactions are known to occur, such as infectious mononucleosis, malaria, measles, scarlet fever, pneumonia and chickenpox; from a group of presumably normal persons, and from a person whom we classified in a questionable group.

The present study was undertaken in collaboration with Dr. R. L. Kahn and his associates at the University Hospital, Ann Arbor, Mich. We were thus afforded the unusual opportunity of having the tests performed under ideal conditions. The specimens collected were forwarded to Dr. Kahn's Laboratory without furnishing any clinical data. The testing, therefore, was entirely uninfluenced by knowledge of the source of the blood or of the diagnosis for the subject. This plan was followed at the request of Dr. Kahn. Every specimen submitted was examined with the Kahn standard, presumptive and verification tests in the Kahn Laboratory. In addition to the aforementioned tests all specimens were subjected to the Kline diagnostic and exclusion tests, the Wassermann test and the Mazzini test in the laboratory of one of us (C. R. R.). Thus, all specimens were subjected to a battery of tests.

RESULTS

Patients with Syphilis.—Perhaps one of the best means of judging a verification test is to determine its behavior in known cases of syphilis, and with this view in mind, a number of patients with early and late syphilis under treatment or observation were subjected to this test. A total of 349 such patients were tested, and the results of serodiagnostic tests were as follows: Forty-two patients (12 per cent) gave negative reactions; 82 (23.5 per cent), doubtful reactions; 145 (41.5 per cent), weakly positive reactions, and 80 (23 per cent), strongly positive reactions. The results of the verification test (table 4) in these cases are as follows: 1. Of the 42 patients who gave negative serologic reactions, 38 (90.4 per cent) gave the negative type and 3 (7.1 per cent) the general biologic (nonsyphilitic) type of verification reaction; the remaining patient (2.4 per cent) gave an inconclusive reaction. 2. Of the 82 patients who gave doubtful (plus-minus) serodiagnostic reactions, 28 (34.1 per cent) gave reactions to the verification test of the negative type; 10 (12.1 per cent), of the general biologic nonsyphilitic type; 33 (40.2 per cent), of the syphilitic type, and 11 (13.4 per cent), inconclusive. 3. Of the 145 patients who gave weakly positive (1 plus) serodiagnostic reactions, 111 (76.5 per cent) gave the syphilitic type of reaction to the verification test, and 17 (11.7 per cent) inconclusive results. 4. Of the 80 patients who gave strongly positive (2 plus) serodiagnostic reactions, all (100 per cent) gave the syphilitic type of verification reaction.

It must be pointed out that the Kahn verification test is not claimed to be a diagnostic procedure, but it is a supplementary test. When the diagnostic reaction is positive, the verification test is claimed to be able to indicate if the reaction is or is not associated with syphilis. When the reaction to a diagnostic test is negative in the presence of syphilis,

the reaction to a verification test necessarily is largely of the negative type. It is therefore understandable that of the 40 patients with negative serodiagnostic reactions none gave the syphilitic type of verification reaction. On the other hand, the serums showing strongly positive diagnostic reactions all showed the syphilitic type of verification reaction. In the group giving doubtful and weakly positive serologic titers the verification test elicited 40.2 and 76.5 per cent syphilitic type reactions respectively.

TABLE 4.—*Reactions to the Kahn Verification Test Obtained in Three Hundred and Forty-Nine Persons with Syphilis Who Have Had Varying Amounts of Therapy*

	Reaction to Kahn Verification Test							
	Negative Type		General Biologic (Nonsyphilitic) Type		Syphilitic Type		Inconclusive Results	
Reaction to Serodiagnostic Tests	Number	Per Cent	Number	Per Cent	Number	Per Cent	Number	Per Cent
Negative	38	90.4	3	7.1	0	....	1	2.4
Doubtful	28	34.1	10	12.1	33	40.2	11	13.4
Weakly positive	2	1.3	15	10.3	111	76.5	17	11.7
Strongly positive	0	...	0	....	80	100.0	0	....

TABLE 5.—*Reaction to the Kahn Verification Test Obtained in Two Hundred and Sixty-Nine Presumably Nonsyphilitic Persons*

	Reaction to Kahn Verification Test							
	Negative Type		General Biologic (Nonsyphilitic) Type		Syphilitic Type		Inconclusive Results	
Reaction to Serodiagnostic Tests	Number	Per Cent	Number	Per Cent	Number	Per Cent	Number	Per Cent
Negative	209	85.3	34	13.8	2	0.8	0	....
Doubtful	11	52.3	10	47.6	0	...	0	....
Weakly positive	2	66.6	1	33.3	0	...	0	....
Strongly positive	0	....	0	....	0	...	..	....

Presumably Nonsyphilitic Persons.—Two hundred and sixty-nine patients observed in routine dermatologic practice and suffering from a variety of dermatoses but without clinical evidence or reason to suspect syphilis were subjected to the verification test. Two hundred and forty-five of these patients (table 5) gave negative reactions to serologic tests; of these, 209 (85.3 per cent) gave the negative type and 34 (13.8 per cent) the general biologic (nonsyphilitic) type of verification reaction, and the remaining 2 (0.8 per cent) gave the syphilitic type of verification reaction. These 2 patients were then subjected to careful clinical reexamination, but it was not possible to establish a diagnosis of syphilis; it should be mentioned, however, that examination of the spinal fluid was

not done. There were 21 serums which gave doubtful serologic reactions. Of these, 11 (52.3 per cent) showed the negative type and 10 (46.6 per cent) the general biologic (nonsyphilitic) type of verification reaction. Only 3 serums (1.5 per cent) gave weakly positive serodiagnostic reactions, yet none of these showed a syphilitic type of verification reaction. No serums in this entire group showed strongly positive reactions.

The results show that in this group of 269 patients with such conditions as lupus erythematosus, herpes simplex, herpes zoster, Vincent's stomatitis, tuberculosis, acne and pityriasis rosea, 21 (7 per cent) had doubtful reactions and 3 (1.5 per cent) had weakly positive reactions to serodiagnostic tests, but none of them had a syphilitic type of reaction to a vertification test.

It is of interest to note the high incidence of the general biologic (nonsyphilitic) type of reaction in this group of cases, a matter to which Kahn has already called attention. Kahn expressed the opinion that it is these patients with the general biologic (nonsyphilitic) type of reaction that may exhibit nonspecific reactions to serodiagnostic tests if and when some serious infection or other disturbance develops.

Questionable Group.—In the questionable group we have included those patients who, in spite of careful history taking and clinical examination, failed to reveal evidence of syphilis but at one time or another gave positive reactions to serodiagnostic tests, varying in degree from doubtful to strongly positive, without any assignable cause. Many of these were observed for long periods and were repeatedly examined clinically as well as serologically without revealing any evidence pointing to a diagnosis of syphilis, although syphilis could not be definitely ruled out. It is this group especially that furnish the "problem cases" in the diagnosis of syphilis. With the histories normal, clinical evidence absent and serologic reactions fluctuating and usually of low titer, it was hoped that the verification test might assist in detecting which patients were syphilitic and which were not. This group of 253 came to our attention in the process of the routine examination of about 20,000 persons. Of this group (table 6), 36 (14.2 per cent) gave negative reactions to serodiagnostic tests; 101 (39.9 per cent), doubtful reactions; 103 (40.7 per cent), weakly positive reactions, and 13 (5.1 per cent), strongly positive reactions. Of the 36 patients who gave negative serologic reactions, 26 gave the negative type and 9 the general biologic (nonsyphilitic) type of verification reaction. The remaining patient was examined three times during five months, with the following results: (1) verification reaction inconclusive, suggestive of syphilitic type; (2) verification reaction of syphilitic type; (3) verification reaction inconclusive. Of the 101 serums giving doubtful (1 plus) serologic reactions. 34 gave the negative type, 39 the general biologic (nonsyphilitic) type

and 20 the syphilitic type of verification reaction; 8 gave inconclusive results. Of the 103 serums giving weakly positive serologic reactions, 3 gave the negative type, 34 gave the general biologic (nonsyphilitic) type and 53 the syphilitic type of verification reaction; 13 gave inconclusive results. Of the remaining 13 serums, which gave strongly positive (2 plus) serologic reactions, 3 gave the general biologic (nonsyphilitic) type and 9 the syphilitic type of verification reaction; 1 gave inconclusive results.

It will thus be observed that with increase in serologic titer, there is a corresponding increase in the number of verification reactions of the syphilitic type and that the highest percentage of this type of reaction was obtained in patients showing strongly positive serodiagnostic reactions; also, the lower the serologic titer the higher the incidence of the general biologic (nonsyphilitic) type of reaction to the verification test.

TABLE 6.—*Reactions to the Kahn Verification Test Obtained in Two Hundred and Fifty-Three Members of the Questionable Group*

Reaction to Serodiagnostic Tests	Reaction to Kahn Verification Test							
	Negative Type		General Biologic (Nonsyphilitic) Type		Syphilitic Type		Inconclusive Results	
	Number	Per Cent	Number	Per Cent	Number	Per Cent	Number	Per Cent
Negative	26	72.2	9	25.0	1	2.7	0	...
Doubtful	34	33.6	39	38.6	20	19.8	8	7.9
Weakly positive	3	2.9	34	33.0	53	51.4	13	12.6
Strongly positive	0	...	3	23.0	9	69.2	1	7.7

If the syphilitic type of verification reaction is indicative of syphilis, then, of the 253 patients in the questionable group, 83 (32.7 per cent)—those showing this type of reaction—were presumably syphilitic. Further clinical and serologic studies will be necessary to establish a diagnosis in these cases. It should be mentioned that of the 44 patients in this classification who were retested a number of times, the results of the verification test remained consistent in 33 and inconsistent in 11.

Patients with Contagious Diseases.—A group of 119 patients with contagious diseases (table 7) was subjected to the verification test. Of these, 67 were suffering from scarlet fever, 40 from measles and 12 from varicella. Nearly all had temperatures which ranged up to 105 F. With the exception of 2 patients, 1 (with measles) with known syphilis and 1 (with scarlet fever) for whom a diagnosis of syphilis could not be made, none had an average serologic reaction above plus-minus, and none had a syphilitic type of verification reaction. Of the serums giving negative reactions, 64 (69.5 per cent) gave a negative type and 27 (29.3 per cent) a general biologic (nonsyphilitic) type of reaction to a verifica-

tion test, and 1 (1.1 per cent) gave an inconclusive result. Of the serums giving doubtful serologic reactions, 5 (20 per cent) gave the negative type and 16 (64 per cent) the general biologic (nonsyphilitic) type of verification reaction, and 4 (16 per cent) gave inconclusive results. The 2 serums giving 1 plus reactions to serodiagnostic tests were those of the aforementioned patient with measles, who also had syphilis, who gave a syphilitic type of verification reaction, and the patient with scarlet fever, who gave an inconclusive result to a verification test.

It will be noted that in the group of serums giving negative diagnostic reactions there were 29.3 per cent general biologic (nonsyphilitic) type verification reactions, while in the group giving plus-minus reactions there were 64 per cent verification reactions of the general biologic type.

Based on our observations it may be stated that temperature in itself did not seem to influence the incidence of the general biologic (non-

TABLE 7.—*Reaction to the Kahn Verification Test Obtained in One Hundred and Nineteen Patients with Contagious Diseases*

Reaction to Serodiagnostic Tests	Reaction to Kahn Verification Test							
	Negative Type		General Biologic (Nonsyphilitic) Type		Syphilitic Type		Inconclusive Results	
	Number	Per Cent	Number	Per Cent	Number	Per Cent	Number	Per Cent
Negative	64	69.5	27	29.3	0	....	1	1.1
Doubtful	5	20.0	16	64.0	0	....	4	16.0
Weakly positive	0	....	0	....	1	50.0	1	50.0
Strongly positive	0	....	0	....	0	....	0	....

syphilitic) type of reaction to the verification test one way or the other. Patients with the highest temperature often had the negative type of verification reaction, while those with low temperature often gave the general biologic (nonsyphilitic) type. However, in the group of patients with contagious diseases as a whole the incidence of the general biologic (nonsyphilitic) type of reaction to verification tests was much higher than in the normal, presumably nonsyphilitic, group.

It should be noted that with the appearance of demonstrable reagin in the serum by one or more of the various serologic tests, there was definite increase in the incidence of general biologic (nonsyphilitic) type of verification reaction.

Pregnant Women.—Specimens of blood from 219 pregnant women were subjected to the verification test (table 8). Of this group 198 gave negative serologic reactions, and of these, 156 (78.7 per cent) gave the negative type and 42 (21.3 per cent) the general biologic (nonsyphilitic) type of verification reaction. Of the remaining 21 patients, 18 gave doubtful serologic reactions, of whom 8 (44.4 per cent) had the negative type and 10 (55.5 per cent) the general biologic (nonsyphilitic) type

of verification reaction. One of these was known to have syphilis and also had lymphogranuloma venereum. The last 3, who gave strongly positive serodiagnostic reactions as well as the syphilitic type of verification reaction, were known to have syphilis.

Although not directly related to the matter under discussion, it is of interest to point out that the incidence of positive serologic reactions in the pregnant women studied was no higher than is said to occur in the general population; in other words, pregnancy in itself does not seem to produce false positive reactions.

Patients with Diseases with Which Occasional False Positive Serologic Reactions Are Said to Occur.—A study was made of the results of the verification test in a group of 64 patients with diseases other than syphilis with which occasional false positive serologic reactions are said to occur, including pneumonia (31 patients), lymphogranuloma (9

TABLE 8.—*Reactions to the Kahn Verification Test Obtained in Two Hundred and Nineteen Pregnant Women*

Reaction to Serodiagnostic Tests	Reaction to Kahn Verification Test							
	Negative Type		General Biologic (Nonsyphilitic) Type		Syphilitic Type		Inconclusive Results	
	Number	Per Cent	Number	Per Cent	Number	Per Cent	Number	Per Cent
Negative	156	78.7	42	21.2	0	....	0	....
Doubtful	8	44.4	10	55.5	0	....	0	....
Weakly positive	0	....	0	....	0	....	0	....
Strongly positive	0	....	0	....	3	100.0	0	....

patients), carcinoma (3 patients), infectious mononucleosis (13 patients) and jaundice (8 patients). These diseases are considered together, because separate evaluations of each showed results that were practically identical. In this group 45 patients proved to be serologically normal, and of these 38 (84.4 per cent) gave the negative type and 7 (15.5 per cent) the general biologic (nonsyphilitic) type of verification reaction. Of the 11 with doubtful (plus-minus) serologic reactions, 3 (27.2 per cent) gave the negative type, 7 (63.3 per cent) the general biologic (nonsyphilitic) type and 1 (0.9 per cent) the syphilitic type of verification reaction. Five patients had weakly positive (1 plus) serologic reactions, and of these 1 (20 per cent) gave the negative type, 3 (60 per cent) the general biologic (nonsyphilitic) type and 1 (20 per cent) the syphilitic type of verification reaction. In the case of the last-mentioned patient, as well as of the aforementioned one with the syphilitic type of verification reaction, syphilis could not be ruled out. Three patients gave strongly positive serologic reactions, and all of them had the syphilitic type of verification reaction and were known to have syphilis.

It is thus noted that in this group also there is a relatively high incidence of the general biologic (nonsyphilitic) type of verification reaction.

Miscellaneous Diseases.—Leprosy: We had occasion to study 8 patients with leprosy. Two had negative serologic reactions; one of them gave a negative type and the other a general biologic (nonsyphilitic) type of verification reaction. There were 2 patients with doubtful (plus-minus) and 2 with weakly positive (1 plus) serologic reactions; all of them gave the general biologic (nonsyphilitic) type of verification reaction. Of the 2 patients with strongly positive serologic reactions, 1 gave a general biologic (nonsyphilitic) type and the other a syphilitic type of verification reaction.

Malaria: Sixteen patients with malaria were submitted to the verification test. Five of them were known to have cerebrospinal syphilis, and malaria had been administered as a therapeutic measure. Four of these 5 gave weakly positive (1 plus) serologic reactions; 2 of the 4 gave the syphilitic type and 1 the negative type of verification reaction and 1 gave an inconclusive result. In the remaining 11 patients syphilis could not be established. Of these, 4 gave negative serologic reactions; 3 of the 4 gave the negative type and 1 the syphilitic type of verification reaction. Of the 2 patients with doubtful (plus-minus) serologic reactions, 1 gave a general biologic (nonsyphilitic) type of verification reaction and the other an inconclusive result. There were 3 patients with weakly positive (1 plus) serologic reactions; 2 of them gave a general biologic (nonsyphilitic) type and 1 a syphilitic type of verification reaction. Two patients gave strongly positive serologic reactions; one of them gave the general biologic (nonsyphilitic) type of verification reaction and the other an inconclusive result.

Pinta: Two hundred and sixty-eight patients with pinta were subjected to the verification test. All gave strongly positive reactions to serodiagnostic tests varying from 4 to 160 units with the Kahn quantitative test. Of these, 225 (83.9 per cent) gave the syphilitic type of verification reaction and 17 (6.3 per cent) the general biologic (nonsyphilitic) type, and the remaining 26 (9.7 per cent) gave inconclusive results. These results parallel those reported by Escobar.[12]

INTERPRETATION OF RESULTS

Agreements.—One hundred and eighty-two verification tests were made on 74 patients for whom the results were always the same. It should be stated that the nonsyphilitic reactions were sometimes of the general biologic (nonsyphilitic) type and at other times the negative type.

12. Escobar, J. J. A.: Bol. clin. **6**:543, 1940.

Disagreements.—Disagreements in results were observed in 38 patients in whom multiple verification tests were made at varying intervals. One patient had early syphilis and was under active treatment. Six verification tests were performed; the first and second gave a syphilitic type of reaction; the third gave an inconclusive result, and the fourth, fifth and sixth gave a negative type of reaction. The discrepancies in this case speak highly for the value of the test, since this patient was under active treatment and the verification reaction, which was originally of the syphilitic type, became of the negative type as the serodiagnostic reactions became negative.

The remaining 37 patients could be divided into those whose reactions showed (*a*) decided disagreement, 16, and (*b*) partial disagreement, 21. On the 16 patients with reactions showing decided disagreement fifty-three verification tests were done. There was no

TABLE 9.—*Results of Verification Tests*

	Patients		Specimens
Agreements	74		182
Disagreements			
Marked	17	(12 members of questionable group) (5 known syphilitic persons)	53
Partial	21		64
Split specimens			
Agreement	15		32
Disagreement	1		
Total	128		331

assignable reason for the disagreements. The patients differed in nowise from the many in whose reactions there were no discrepancies on repeated tests. Four were known to have syphilis, and 12 were in the questionable group, i. e., patients who had no clinical evidence or history referable to syphilis but who did have doubtful and positive serologic reactions on repeated occasions.

As an example of a discrepancy the following case may be cited: M. H., a woman aged 26, stated that she had not had syphilis. Clinical and serologic investigation of parents and siblings gave negative results. Four serologic examinations were made at varying intervals. The serodiagnostic tests in all instances gave weakly positive (1 plus) reactions. The first verification test gave a syphilitic type of reaction; the second verification test, ten weeks later, gave a general biologic (nonsyphilitic) type of reaction; the third test, sixteen weeks later, again gave a syphilitic type of reaction, while the last test, seven weeks later, gave a general biologic (nonsyphilitic) type of reaction.

On the remaining 21 patients sixty-four verification tests were done, which showed partial discrepancies. The first verification test resulted

in one of the three main types of reaction, while a repetition of the test gave inconclusive results. This occurred in persons known to have syphilis as well as in members of the questionable group.

Split Specimens.—From 20 patients sufficient blood was obtained at the same time to enable us to send duplicate specimens for the verification test. Among the results there was but a single discrepancy. In 16 instances the results of the two verification tests were identical. Three of the twenty duplicate specimens were not examined, either because there was insufficient serum or because the specimens were spoiled in transit. In 1 case, as stated, there was a discrepancy. The original verification reaction had been of the syphilitic type. Duplicate specimens were examined two weeks later; one of them gave a negative type of

TABLE 10.—*Comparison of the Incidence of the General Biologic Type and of the Syphilitic Type of Reaction to the Verification Test in Known Syphilitic Persons, Presumably Normal Persons and Members of the Questionable Group*

Reaction to Serodiagnostic Tests	Known Syphilitic Persons				Presumably Normal Persons				Members of Questionable Group			
	General Biologic Type		Syphilitic Type		General Biologic Type		Syphilitic Type		General Biologic Type		Syphilitic Type	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Negative	3	7.1	0	....	34	13.8	2	0.8	9	25.0	1	2.7
Doubtful	10	12.1	33	40.2	10	47.6	0	...	39	38.6	20	19.8
Weakly positive	15	10.3	111	76.5	1	33.0	0	...	34	33.0	53	51.4
Strongly positive	0	....	80	100.0	0	....	0	...	3	23.0	9	69.2

verification reaction, while the other gave an inconclusive result. A third set of specimens was sent two weeks later; one of them gave a syphilitic type of verification reaction and the other a negative type.

COMMENT

The Kahn verification test is a procedure designed to assist in the detection of false positive reactions to serodiagnostic tests. This communication deals with an evaluation of the test in 1,565 selected patients, including persons who were presumably normal, members of a so-called questionable group, persons in various stages of syphilis and persons with a number of diseases and conditions in which false positive reactions occasionally occur.

The data presented throw some light on the three major questions concerned in the problem. First, do persons who have syphilis always give a syphilitic type of reaction to a verification test? This may be answered in the affirmative if the statement is limited to persons having

a high serologic titer, 100 per cent of whom gave a syphilitic type of verification reaction. Of those with doubtful and weakly positive serologic reactions, 40.2 per cent and 76.5 per cent respectively gave the syphilitic type of verification reaction, while 90 per cent of those with negative serologic reactions gave a negative type of verification reaction. The percentage of syphilitic persons giving the general biologic (nonsyphilitic) type of verification reaction was 7.1 of those with negative serologic reactions, 12.1 of those with doubtful serologic reactions and 10.3 of those with weakly positive serologic reactions, while those with inconclusive results varied from 2.4 to 13.4 per cent.

It is to be borne in mind that of the syphilitic patients with doubtful and weakly positive serodiagnostic reactions, 46.3 per cent and 11.7 per cent respectively had the general biologic (nonsyphilitic) and the negative type of verification reactions. What interpretation to place on these results is problematic. Do the results mean that these patients have had adequate therapy? The parallelism between weakly positive and doubtful serodiagnostic reactions and negative verification reactions can be determined only after further study.

The second major question is: Do persons presumably free from syphilis always give either a negative or a general biologic (nonsyphilitic) type of reaction to a verification test? Our statistics indicate that 267 of 269 nonsyphilitic patients gave either one or the other of these reactions. Only 2 (0.8 per cent) gave a syphilitic type of verification reaction, although the serodiagnostic reactions of these 2 patients were negative. It is conceivable that these 2 had syphilis, although we could not prove this by clinical or serologic examination. It is of interest to note the high incidence of the general biologic (nonsyphilitic) type of verification reaction, especially in persons with doubtful and weakly positive serodiagnostic reactions. Of further interest is the fact that there were no inconclusive results in the entire 269, a definite reaction of one type or another having been obtained.

In the questionable group, of 253 persons studied the verification test elicited the syphilitic type of reaction in 83, or 32.7 per cent of the total. Only further investigation can decide whether or not these persons are syphilitic.

An interesting fact brought to light by this study is that an acute contagious disease tends to cause a relatively high incidence of the general biologic (nonsyphilitic) type of verification reactions, up to 64 per cent in the group with doubtful reactions. Kahn claimed that a person showing a tendency to give this type of reaction is likely to give a false positive reaction to a serodiagnostic test under certain pathologic conditions.

It can be stated that the height of the temperature by itself did not appear to influence the incidence of the general biologic (nonsyphilitic) type of reaction to a verification test.

In the series of pregnant women and in the group with various diseases with which occasional false positive serodiagnostic reactions are said to occur, the Kahn verification test made an excellent showing. All specimens that gave a syphilitic type of verification reaction were from patients known to have syphilis, and but a single pregnant woman with known syphilis, who, however, had had considerable treatment, gave a general biologic (nonsyphilitic) type of verification reaction.

SUMMARY AND CONCLUSIONS

The reactions to the Kahn verification test were studied for 1,565 persons with various conditions, comprising syphilis, various nonsyphilitic dermatoses, questionable conditions, pregnancy, contagious diseases, pinta, malaria, leprosy and miscellaneous conditions.

In the group of 349 syphilitic patients, who had received varying amounts of treatment, the verification tests gave the syphilitic type reaction in 100 per cent of those with strongly positive serodiagnostic reactions, in 76.5 per cent of those with weakly positive reactions and in 40.2 per cent of those showing doubtful reactions. There were no reactions of the syphilitic type in the patients with negative serodiagnostic reactions. The incidence of the general biologic type of verification reaction in the group with negative serologic reactions was 7.1 per cent and in the group with doubtful serologic reactions 12.1 per cent.

In the nonsyphilitic group, 269 in number, there were but 2 patients who had a syphilitic type of verification reaction. Syphilis could not be established in these patients. The incidence of biologic reactions in this group varied from 13.8 to 47.6 per cent.

In the questionable group, of 253 members, 83 patients (32.7 per cent) gave a syphilitic type of verification reaction. Further study is necessary to determine whether they actually have syphilis. The incidence of the general biologic (nonsyphilitic) type of reaction in this group varied between 2.3 and 38.6 per cent.

In the group of patients with acute contagious diseases the general biologic (nonsyphilitic) type of verification reaction was obtained in between 29.3 and 64.0 per cent, and in the pregnant women this type reaction was obtained in between 21.2 and 55.5 per cent.

The highest incidence of the general biologic (nonsyphilitic) type of reaction is found to be associated with the doubtful serodiagnostic reactions in all groups.

The percentage of the syphilitic type of verification reaction increases with the increase in the titer of serodiagnostic reaction.

In the group of 268 patients with pinta, all of whom gave strongly positive serodiagnostic reactions, 83.9 per cent gave a syphilitic type of reaction to a verification test.

Agreements as well as discrepancies were observed in a number of blood specimens that were subjected to repeated verification tests.

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Dr. Jesse M. Bullowa furnished the blood specimens of patients with pneumonia. Dr. Samuel A. Cosgrove, director of the Margaret Hague Maternity Hospital, Jersey City, N. J., and Dr. J. F. Von Der Leith, director of Hudson County Laboratories, Jersey City, N. J., supplied the blood specimens of pregnant women. Dr. Jose J. Escobar supplied the blood specimens from patients with pinta, malaria and leprosy.

Dr. Reuben L. Kahn and his laboratory staff and Miss Clarise E. Hazay gave valuable assistance.

ABSTRACT OF DISCUSSION

DR. L. W. SHAFFER, Detroit: I consider this paper an outstanding contribution to this meeting. One of the most critical problems of syphilology is the need of an effective means of recognizing false positive serologic reactions and of interpreting persistent weakly positive reactions. Dr. Kahn has given a new approach and a rational explanation of false positive reactions by means of the verification test that distinguishes between the general biologic (nonsyphilitic) type of reaction, given to a decided degree by lower animals and to a lesser degree by human beings, and the syphilitic type of reaction. The authors' report indicates that the general biologic reactions are increased both in titer and in incidence in the presence of clinical conditions that are recognized as being associated with false positive reactions.

The Social Hygiene Clinic of the Detroit Department of Health has cooperated with Dr. Kahn in supplying bloods, largely from persons making up the questionable group, throughout the period of Dr. Kahn's development of this test. In general, the verification test has confirmed the clinical diagnosis. There have been, however, a number of inconsistencies that require explanation and further study of both the technic and the interpretation of the test. For example, Dr. Kahn studied the verification test in 120 persons with early syphilis after they had received the intensive five day treatment. The general biologic type of reaction was reported in approximately 25 per cent of these cases. This occurs when the standard Kahn reaction is only weakly or moderately positive, although biologic types of reaction were reported for several persons with quantitative titers as high as 60 units. Evidently early syphilis, like some other acute infections, tends to stimulate the biologic type of reaction in human blood serum.

Dr. Kahn has informed me that he has available supplementary verification procedures capable of detecting both the syphilitic type and the general biologic type of reactions when they exist simultaneously in cases of early syphilis.

In a group of 220 patients who persistently presented weakly or moderately positive serologic reactions as the only evidence of syphilis, the reactions to the verification test were in 25 per cent of the biologic type, in 42 per cent of the

syphilitic type, in 12 per cent inconclusive and in the remaining 21 per cent negative. In the last-mentioned group the serum showed both the syphilitic and the biologic type of reaction, but neither predominated. The strength of such reactions may fluctuate; the syphilitic type may predominate in one report and the biologic type in the next. A single verification test should not be considered diagnostic in such cases. I have seen strongly positive standard Kahn reactions classified as general biologic reactions by the verification test in clinical examples of late syphilis. This should not necessarily be considered as reflecting against the specificity of the verification test. It is possible that there was actually no syphilitic type of reagin present in the blood serum. Dr. Kahn advises repetition of the verification test in all questionable and asymptomatic patients.

The appropriateness of the term verification for this new serologic procedure is not certain. Only time and extensive studies can ultimately establish the value and limitations of this procedure in the serodiagnosis of syphilis.

Dr. Paul A. O'Leary, Rochester, Minn.: My associates and I have also worked with Dr. Kahn in an effort to appraise the verification test. However, we have limited our survey to the group with the questionable serologic reactions and with no clinical signs of syphilis. Dr. Chargin crystallized the problem when he said, "Are they syphilitic or not?" I have been especially concerned with the young women who give questionably positive reactions or varying degrees of positive reactions from week to week, who have no evidence of syphilis clinically and whose families also have no evidence of syphilis. In many cases of this kind a positive reaction is first obtained when the patient applies for a marriage license, and whether it is a biologic false positive reaction or due to technical errors or evidence favoring the presence of syphilis is a difficult problem to settle. The verification test (because of its variations) has not helped materially in arriving at a conclusive decision in this group. A strongly positive reaction obtained one day and a negative reaction the next week by the verification test on the same patient added to the confusion when similar serologic variations were obtained in our own laboratory while running a battery of tests of the Kahn, the Kline, the Hinton, the Kolmer and occasionally the Mazzini test against it. In other words, I think there is a group of patients, and I am sure many physicians are also encountering them, who give biologic or false positive reactions which fluctuate from week to week and from month to month.

Dr. Senear and I have been watching a young woman going on the fourth year now, who has had more than fifty specimens examined with repeated variations in the reactions. In contrast, patients are also seen with clinical manifestations of syphilis and with similar variations in the reports when the various flocculation technics are employed in examining the same specimen. To me, this problem is serious, because I believe that the serologists, in their efforts to improve serologic testing for syphilis, have increased the sensitivity of the test at the cost of the specificity. In other words, instead of developing new tests, it seems to me that the serologist should be encouraged to improve the specificity of the test and to continue further research in an effort to crystallize ideas about the "reagin," present knowledge of which is so limited.

Dr. Dudley C. Smith, University, Va.: The designation "verification test" is wrong if it implies that this test is always correct. This is undoubtedly an improved serologic test for syphilis, but it still has some of the disadvantages of other tests. None of the tests for syphilis are 100 per cent specific or 100 per cent selective. Most persons with immunologic or resistance reactions to Spirochaeta pallida, some persons with certain other infections and some normal persons, as

well as animals other than man, produce or have in their serum a substance called reagin, which when mixed with a certain substance called antigen causes fixation or flocculation. This is probably due to a colloidal type of reaction between the molecules. This serologic test for syphilis is not completely specific. However, the percentage of accuracy is apparently higher than with the older tests. The sensitivity and specificity of laboratory procedures by which syphilis is diagnosed have definitely improved. In this way more syphilis is being detected and fewer errors are being made in labeling normal persons with this infection.

Dr. H. J. Templeton, Oakland, Calif.: I was sorry but not surprised to hear Dr. O'Leary state that the verification test had helped him not one whit, because there is great need of such help in the problem cases at the University of California.

In 1939, and again in 1940, all the freshman matriculants were given routine Kahn tests. I have forgotten the exact number, but such tests were close to 5,000 each year. Approximately 1 per cent of the students so examined showed some degree of positive reactions. That is where the troubles began, because these students were from the middle or upper class of society and their parents would have been much perturbed at a report of a positive serologic reaction. All of the students who had initially positive Kahn reactions were rechecked, using the Wassermann, the Kline and the Kahn tests, and about 0.8 per cent (of the total number of students) fell in the class that Dr. O'Leary has described; many of them were women, but some were men. The confusing finding often consisted of a negative or doubtfully positive Wassermann reaction along with a 1 or 2 plus reaction to a precipitation test.

What should be done with these students? The problem was settled by depending on the family history, Wassermann tests of the parents when possible, repeated rechecks, physical examinations, examination of eyegrounds and examination of spinal fluid in most instances. When finally there was no other suggestive finding but a 1 or 2 plus reaction to a precipitation test, it was disregarded.

It will interest you to know that only 0.2 per cent of the, roughly, 5,000 matriculants were accepted as being syphilitic.

Dr. Arthur G. Schoch, Dallas, Texas: I was disappointed in the results reported but not at all surprised. My associates and I have sent a few specimens to Kahn's laboratory for that verification test, with indifferent results. We have used four or five standard tests in parallel studies and have observed apparently contradictory results (for instance, a positive reaction to a complement fixation test and a negative reaction to a flocculation test and vice versa) in all possible arrangements and patterns. One can hardly escape the impression that there must be more than one substance that is designated as reagin. We have found in the last two years that quantitative studies, using the Kolmer complement fixation test, the standard Kline test and the standard Eagle test, have helped to differentiate between true and false positive reactions. False positive reactions are rarely, if ever, higher than 1½ units of reagin, in my experience. Active syphilitic disease, furthermore, yields titers greater than several units in the main.

Questionable syphilitic reactions may be still observed, but fewer patients must be classified as syphilitic if quantitative serologic tests are used instead of routine qualitative tests.

Dr. Louis Chargin, New York: I am not as pessimistic as is Dr. O'Leary with respect to this test. While it has been disappointing in a great many instances, in others it has proved to be correct and, therefore, of help.

To cite a case, a woman suffering from what was diagnosed as leukemia gave a negative serologic reaction to a complement fixation test but a positive reaction on several occasions to the flocculation tests. Dr. Kahn reported the result of his test as showing 1,600 units yet a verification reaction of the general biologic type. There was no history or clinical evidence of syphilis, and some physicians regarded the blood picture as leukemoid. She has since died, and a thorough postmortem examination failed to show any evidence of syphilis. I could mention several similar instances in which the complement fixation tests as well as the flocculation tests gave positive reactions and in which the verification reactions proved to be of general biologic type. Careful subsequent examinations could not sustain a diagnosis of syphilis in these cases.

On the other hand, one must admit that there were many patients with known syphilis who unexpectedly showed a general biologic type of reaction, while others lacking evidence of syphilis showed a syphilitic type of reaction.

I think that Dr. Shaffer was right when he stated that there is some value in the test but that it is not as yet ready for general use and that further study of the test is required.

Dr. Templeton's remarks are apropos because it is precisely in the type of case to which he refers that the verification test might have been of service, but in its present state of development it seems to be of value only in a portion of the cases. Perhaps it is possible to further perfect the test, and the work should certainly be continued under adequate control.

FOX-FORDYCE DISEASE

REPORT OF A CASE

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The case of Fox-Fordyce disease to be reported conforms in general with most of the cases described since the original report, in 1902.[1] The eruption in its appearance and course was typical; resistance to treatment was characteristic, and the histologic picture agreed in the main with that in other cases. Additional observations are recorded which were considered of enough interest to warrant this report.

REPORT OF CASE

C. S., a Negress, aged 37, unmarried, was under treatment for latent syphilis for two years prior to the present complaint. During this time she received twenty-two injections of arsenicals, including both neoarsphenamine and mapharsen (total dose 1.32 Gm.), and forty-eight injections of a bismuth compound.

Points of interest in her past history are one full term pregnancy fifteen years previous to consultation and painful nodules in the breast two years previously. There were no menstrual irregularities until the last two menses, which were scanty, and the patient experienced hot flushes increasingly during this period.

Her condition started five months before consultation with severe itching in the pubic region followed soon by persistent itching in the axillas. There was some lessening of the itching during the menstrual period. The itching was accompanied by nervousness, irritability and fatigue.

General physical examination disclosed no abnormalities. Pelvic examination showed a slight anteflexion of the uterus. In the axillas there was an eruption consisting of uniformily sized and shaped flesh-colored follicular papules, measuring from 2 to 3 mm. in diameter. They were discrete and arranged in linear fashion crosswise in the axilla (fig. *A*). There were a few scattered small papular lesions in the pubic region. The axillary hair was sparse and thin. There were numerous excoriations.

The blood pressure was 110 systolic and 70 diastolic. The basal metabolic rate was —23 per cent. The Wassermann reaction of the blood was strongly positive. The spinal fluid, blood count and urine were normal. The blood cholesterol was 235 mg. per hundred cubic centimeters. Roentgenographic examination of the

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1. Fox, G. H., and Fordyce, J. A.: Two Cases of a Rare Papular Disease Affecting the Axillary Region, J. Cutan. Dis. **20**:1-5, 1902.

chest showed old areas of calcification in the upper lobe of the right lung toward the periphery, suggestive of an old healed tuberculosis. No active foci could be shown.

Treatment for five months was irregular and consisted first of two injections of estrone (theelin), 4,000 international units, followed by the administration of filtered roentgen rays (600 r, with 1 mm. of aluminum) to the pubic and axillary regions. Later 2 mg. of diethylstilbestrol with ½ grain (0.03 Gm.) of thyroid was given orally per day for fourteen days, and this was followed by vitamin A, 50,000 to 100,000 U. S. P. units daily by mouth for fourteen days. Local applications consisted of sulfur, ichthammol and coal tar ointments. A slight alleviation of the itching followed the roentgen therapy, but otherwise her condition remained unchanged.

After three months the patient decided to submit to the removal of skin for histologic study. One specimen was taken from the left axilla, fixed in a solution containing 85 parts of 95 per cent alcohol, 10 parts of full strength solution of formaldehyde U. S. P. and 5 parts of glacial acetic acid. The tissue was embedded in paraffin, sectioned and cleared in the routine way with xylene and stained with hematoxylin and eosin. Two other specimens were taken, one from the right axilla and the other from the right side of the chest wall. These pieces were fixed in a solution of formaldehyde U. S. P. diluted 1:10 for forty-eight hours and then incubated at 56 C. in a saturated solution of hydrosulfuric acid (prepared fresh daily) for six days. The tissues were then embedded in paraffin, sectioned and studied for crystals of arsenic trisulfide.

Sections of the specimen taken from the left axilla showed hyperkeratosis and moderate acanthosis with intracellular and intercellular edema. The acanthosis was also noted surrounding the hair follicles. In the cutis there was a perivascular lymphocytic infiltration. In the deeper layers of the cutis and in the adjoining subcutaneous tissue there were many glandular structures of decided contrasting appearances. In some areas the tubules were widely distended and lined with normal-staining but flattened epithelial cells. The lumens of these tubules were clear (fig. *B*). In other areas the tubules were smaller and lined by large, swollen, pink-staining, columnar epithelial cells, sometimes up to three layers in thickness. The nuclei of these cells were large and clear staining, while the protoplasm of the cell showed a foamy, vacuolated change. Many of these cells had tonguelike projections into the lumen of the gland. Numerous large and minute orange-yellowish, finely granular bodies or inclusions were present in many of the pink-staining columnar cells; some were situated in the tip of the tonguelike projections toward the lumen, and occasionally some were seen near the base of the cells in close proximity to the myoepithelial cells (fig. *C*). The lumens of these glands frequently contained cellular debris. Throughout this glandular area were large foci of lymphocytes with an occasional polymorphonuclear leukocyte.

In the remaining two specimens we were unable to demonstrate crystals of arsenic trisulfide, as described by Osborne.[2] Sections from the tissue treated with hydrosulfuric acid and stained with hematoxylin and eosin again showed the inclusions of the glandular epithelium, although these bodies were much lighter in color than those in the first specimen.

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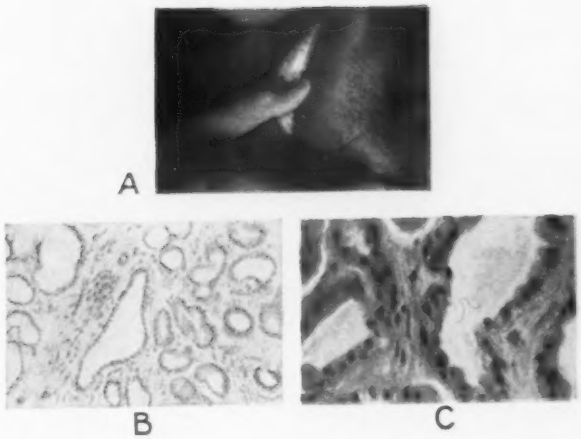
2. Osborne, E. D.: Microchemical Studies of Arsenic in Arsenical Pigmentation and Keratoses, Arch. Dermat. & Syph. **12**:773-787 (Dec.) 1925.



A, fine papular eruption of the axilla. *B*, photomicrograph of sweat glands showing contrasting glandular structures. *C*, photomicrograph showing large orange-yellowish pigment granules in the epithelium of the sweat glands.

COMMENT

At first Fox-Fordyce disease was looked on, even by Fordyce, as a type of neurodermatitis.[3] Later endocrine factors were emphasized, and Netherton [4] reported a case in which the condition was associated with hyperthyroidism and improved after thyroidectomy. Pick [5] pointed out the changes which occur in the apocrine glands during the phases of the menstrual cycle. The condition occurs mostly in the female and usually between the ages of 30 and 40, although it has been reported in a girl of 13.[6]

Our patient showed nervousness and irritability only after the onset of the eruption. Itching, easy fatigue, low basal metabolic rate and low blood pressure could be interpreted as evidence of neurocirculatory instability which may accompany neurogenic or functional dermatoses. The same signs and symptoms could as well be attributed to early menopausal changes which the patient might be experiencing.

This patient gave no history of abnormal menstrual function. Two years before the onset of her present trouble, she had painful "lumps" in both breasts, and this could have been a chronic cystic mastitis, so common in women who have borne children. These nodular changes in the breast are dependent on a hormonal imbalance during phases of the menstrual cycle, with the nodules becoming more pronounced and tender during the premenstrual phase. Sections from such breasts show epithelial hyperplasia, with pink-staining columnar cells lining the acini of the glandular structure and decided cystic changes with foci of lymphocytic infiltration. The changes in the breast glands are similar to those described in the sweat glands in Fox-Fordyce disease. A similarity between the breast glands and the sweat glands of the axilla has been pointed out by pathologists, and some have considered the glandular structures in the breast as aberrant sweat glands.[7] The general belief is, however, that such structures are not sweat glands but true breast gland structures undergoing a desquamative hyperplasia. The affinity for the acid stain has been ascribed to hyaline degeneration.

In spite of the similarity of the histologic picture of the glands of the breast in the desquamative hyperplastic phase of chronic cystic mastitis

3. Fordyce, J. A.: A Chronic Itching Papular Eruption of the Axillae and Pubes: Its Relation to Neurodermatitis, J. Cutan. Dis. **27**:187-191, 1909.

4. Netherton, E. W.: Fox-Fordyce Disease Associated with Hyperthyroidism, Arch. Dermat. & Syph. **13**:794-805 (June) 1926.

5. Pick, W.: Pathogenesis of Fox-Fordyce Disease, Arch. Dermat. & Syph. **13**:782-793 (June) 1926.

6. Withers, S. M.: Chronic Papular Itching Eruption of the Axillae and Pubes, Arch. Dermat. & Syph. **1**:8-14 (Jan.) 1920.

7. Cheatle, G. L., and Cutler, M.: Tumours of the Breast, Philadelphia, J. B. Lippincott Company, 1931, p. 104.

and the sweat glands in Fox-Fordyce disease, there is a decided difference in the response of the conditions to endocrine therapy. Chronic cystic mastitis is amenable to treatment with estrogenic or other endocrine substances, while Fox-Fordyce disease seems to be notoriously resistant to every type of treatment. The fact that the changes in the sweat glands of the axillas in Fox-Fordyce disease resemble changes known to occur in the breast and appear at the menopausal period would seem to indicate a definite endocrine factor in the background.

The nature of the orange-yellowish inclusions in the glandular epithelium was not clear at first. They were thought to be a product of glandular secretion. Sections were submitted to Dr. Fred D. Weidman,[8] who made the following observations:

> In the epithelium of the apocrine glands of this position there usually occur two kinds of granules. Both are extremely minute and spherical. One stains red and the other yellow. In the section from this patient I did not see the red ones, but here and there I noted an abundance of the minute yellow sphericles. Then, over and above these there are the unusually large sphericles. In my opinion, they are of the same order as the smaller yellow ones. Of course these represent secretion, and it is altogether fair to infer that the estrone therapy was responsible for this exaggerated secretion, with apocrine glands having a functional relation with the endocrine system.

The biopsy specimens were taken about three months after the administration of estrone.

Since our patient had received antisyphilitic treatment, we were interested to determine if the arsenicals could be of etiologic importance in the condition. Following Osborne's method, we were unable to demonstrate the presence of arsenic crystals.

SUMMARY

A case of Fox-Fordyce disease in a Negress with early menopausal symptoms is presented. The similarity of the histologic changes in chronic cystic mastitis and in Fox-Fordyce disease is pointed out. Large yellowish pigment granules within the glandular epithelium are described, and the suggestion is made that these abnormally large pigment granules are due to treatment with endocrine products. Arsenic, administered for the treatment of syphilis, could not be demonstrated in the apocrine glands.

Drs. Paul Brindley and John Sinclair, of the departments of pathology and anatomy, respectively, assisted in the interpretation of the histologic sections.

Dr. Gus Eckhardt, of the department of pathology, took the colored photographs.

8. Weidman, F. D.: Personal communication to the authors.

MASSIVE ARSENOTHERAPY BY THE CONTINUOUS INTRAVENOUS DRIP METHOD

TREATMENT OF ACUTE SYPHILIS OF RABBITS

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The purpose of the present investigation was to compare the effectiveness of neoarsphenamine and mapharsen administered by the continuous intravenous drip method of Chargin, Leifer and Hyman,[1] once a day for five days in succession, with that of the drugs administered in single doses by intravenous injection with the syringe in the usual manner, in the treatment of early or acute syphilis of rabbits.

Adult rabbits were inoculated intratesticularly with the Nichols-Hough strain of Spirochaeta pallida, and treatment was instituted on the development of acute syphilomas showing numerous actively motile spirochetes on dark field examination.

Both compounds were administered in 5 per cent solutions of dextrose. With the continuous drip method each dose was prepared in a total of 80 cc. and given intravenously at the rate of 15 to 30 drops per minute, which required about four hours; one treatment was given on each of five successive days. As shown in table 1, the doses of neoarsphenamine varied from 0.001 to 0.008 Gm., totaling from 0.005 to 0.04 Gm. per kilogram of body weight over the period of five days. As shown in table 2, the doses of mapharsen varied from 0.0005 to 0.004 Gm., totaling from 0.0025 to 0.02 Gm. per kilogram of body weight over the period of five days. No difficulties were experienced in giving the injections by the gravity method through the veins of the ears, the animals being confined in a special box in a comfortable position without the need of employing anesthesia.

In the treatment of the controls neoarsphenamine was administered in 1 per cent and mapharsen in 0.25 per cent solutions in 5 per cent

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From the Research Institute of Cutaneous Medicine.

1. Chargin, L.; Leifer, W., and Hyman, H. T.: Studies of Velocity and Response to Intravenous Injections: Application of Intravenous Drip Method to Chemotherapy as Illustrated by Massive Doses of Arsphenamine in Treatment of Early Syphilis, J. A. M. A. **104**:878 (March 16) 1935. Hyman, H. T.; Chargin, L., and Leifer, W.: Massive Dose Arsenotherapy of Syphilis by Intravenous Drip Method: Five-Year Observations, Am. J. M. Sc. **197**:480 (April) 1939.

dextrose solution. Single doses were given by injection with a syringe at the usual rate. In the case of neoarsphenamine the doses varied from 0.01 to 0.04 Gm. per kilogram of body weight and were therefore comparable to the total dosage given by the continuous drip method. In the case of mapharsen the doses varied from 0.0025 to 0.02 Gm. per kilogram of body weight and were therefore comparable to the total dosage given by the continuous drip method.

Dark field examinations for S. pallida were made at frequent intervals for six weeks, at the end of which time the lymph nodes of all treated animals were inoculated into fresh rabbits, which were kept under observation for three months.

The results are summarized in tables 1 and 2. Both compounds when given by the continuous drip method were well borne, with no fatalities. One rabbit had a severe toxic reaction and died within twenty-four hours after the injection of 0.02 Gm. of mapharsen by single injection with the syringe, but it will be noted that the same dose given at the rate of 0.004 Gm. per day for five days in succession by the drip method presented no clinical evidences of toxicity and that the animal survived indefinitely, which is further evidence of the relation of speed of intravenous injection ("speed shock") in relation to toxicity, as described by Hirshfeld, Hyman and Wanger.[2]

It will be observed that the administration of both compounds in single doses by the syringe method has a more prompt effect on S. pallida in the testicular lesions as determined by dark field examinations than comparable total doses given by the drip method, which was expected to occur.

Otherwise, the end results with both compounds in terms of biologic cure based on the results of lymph node transfers were practically identical in relation to the total dosage administered. For example, as shown in table 1, the minimal curative dose of neoarsphenamine by the drip method was 0.02 Gm. per kilogram of body weight (0.004 Gm. daily for five days in succession) and exactly the same in single dosage by the syringe method. As shown in table 2, the minimal curative dose of mapharsen by the drip method was 0.005 Gm. per kilogram of body weight (0.001 Gm. daily for five days in succession). This dose also effected biologic cure of 1 of 2 rabbits by syringe administration, so that the minimal curative dose was practically the same by both methods.

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2. Hirshfeld, S.; Hyman, H. T., and Wanger, J. J.: Influence of Velocity on Response to Intravenous Injections, Arch. Int. Med. **47**:259 (Feb.) 1931. The results of a detailed study of toxicity by this method of administration, including histologic examinations of the organs for pathologic changes, will be reported separately.

TABLE 1.—*Massive Treatment of Acute Syphilis of Rabbits with Neoarsphenamine*

Weight of Rabbit, Gm.	Treatment: Method of Administration	Treatment: Dose per Kilogram, Gm.	Treatment: Number of Doses	Treatment: Total per Kilogram, Gm.	Results of Dark Field Examination for S. pallida ‡: 2 Days	3 Days	4 Days	5 Days	7 Days	2 Weeks	3 Weeks	4 Weeks	5 Weeks	6 Weeks	Results of Lymph Node Transfers
2,350	Drip *	0.001	5 †	0.005	4	4	1	—	—	—	—	—	—	—	+
2,550	Drip	0.002	5	0.010	4	2	—	—	—	—	—	—	—	—	+
2,950	Drip	0.004	5	0.020	2	1	—	—	—	—	—	—	—	—	—
2,500	Drip	0.008	5	0.040	1	—	—	—	—	—	—	—	—	—	—
2,850	Syringe	0.010	1	0.010	2	1	—	—	—	—	—	—	—	—	+
2,700	Syringe	0.010	1	0.010	2	1	—	—	—	—	—	—	—	—	+
2,850	Syringe	0.020	1	0.020	1	—	—	—	—	—	—	—	—	—	—
2,900	Syringe	0.020	1	0.020	1	—	—	—	—	—	—	—	—	—	—
3,000	Syringe	0.040	1	0.040	—	—	—	—	—	—	—	—	—	—	—
2,950	Syringe	0.040	1	0.040	—	—	—	—	—	—	—	—	—	—	—

* Each treatment averaging four and one-fourth hours for administration.
† At daily intervals.
‡ 4 = Numerous actively motile spirochetes; 2 = fewer and less motile spirochetes, etc.

TABLE 2.—*Massive Treatment of Acute Syphilis of Rabbits with Mapharsen*

Weight of Rabbit, Gm.	Treatment: Method of Administration	Treatment: Dose per Kilogram, Gm.	Treatment: Number of Doses	Treatment: Total per Kilogram, Gm.	Results of Dark Field Examination for S. pallida ‡: 2 Days	3 Days	4 Days	5 Days	7 Days	2 Weeks	3 Weeks	4 Weeks	5 Weeks	6 Weeks	Results of Lymph Node Transfers
2,400	Drip *	0.0005	5 †	0.0025	4	4	2	—	—	—	—	—	—	—	+
2,350	Drip	0.001	5	0.005	4	2	—	—	—	—	—	—	—	—	—
2,450	Drip	0.002	5	0.010	—	—	—	—	—	—	—	—	—	—	—
2,750	Drip	0.004	5	0.020	—	—	—	—	—	—	—	—	—	—	—
2,850	Syringe	0.0025	1	0.0025	2	1	—	—	—	—	—	—	—	—	+
2,450	Syringe	0.0025	1	0.0025	2	—	—	—	—	—	—	—	—	—	+
2,600	Syringe	0.005	1	0.005	1	—	—	—	—	—	—	—	—	—	+
2,500	Syringe	0.005	1	0.005	—	—	—	—	—	—	—	—	—	—	—
2,750	Syringe	0.010	1	0.010	—	—	—	—	—	—	—	—	—	—	—
2,350	Syringe	0.010	1	0.010	—	—	—	—	—	—	—	—	—	—	—
2,400	Syringe	0.020	1	0.020	D										

* Each treatment averaging four hours for administration.
† At daily intervals.
‡ 4 = Numerous actively motile spirochetes; 2 = fewer and less motile spirochetes, etc.

In other words, the minimal curative dose of neoarsphenamine was 0.02 Gm. and of mapharsen 0.005 Gm. per kilogram of body weight by both methods of administration, in confirmation of previous results by single intravenous injections.[3]

COMMENT

So far as the treatment of acute testicular syphilis of rabbitis is concerned, it is therefore apparent that the five day intravenous drip method of administration of neoarsphenamine and mapharsen has no advantage over single doses by syringe injection, as the total amount of both compounds required for biologic cure is well within the limits of tolerance by the latter method of administration. In the five day continuous drip treatment of human beings 4 to 4.5 Gm. of neoarsphenamine [4] or 1.2 Gm. of mapharsen [5] have been employed, but, judging from the results observed herewith, it would appear that seven injections of neoarsphenamine in doses of 0.6 Gm. or twenty injections of mapharsen in doses of 0.06 Gm. at daily intervals may give equal therapeutic results if found permissible from the standpoint of tolerance and toxicity, with excellent chances of being less toxic and less dangerous than the five day continuous intravenous drip method of administration.

Undoubtedly, however, both the continuous drip and the daily syringe method of administration require a smaller total dose for biologic cure than the usual method of giving one dose per week. At least, this is true in the treatment of early syphilis of rabbits. For example, as previously stated, 0.02 Gm. of neoarsphenamine per kilogram of body weight, which is equivalent to 1.4 Gm. per 70 Kg., is effective for biologic cure if given at one time or in five divided doses at daily intervals. But the total dose required when given in six doses at the rate of one per week is at least 0.09 Gm. per kilogram, or about five times greater.[6]

SUMMARY

Syphilitic rabbits have tolerated well the intravenous administration of neoarsphenamine and mapharsen by the continuous intravenous drip method in the doses employed for treatment purposes.

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3. Kolmer, J. A.; Kast, C. C., and Rule, A. M.: The Spirocheticidal, Trypanocidal, and Mechanism of Activity of Organic Arsenical Compounds in Vitro and in Vivo in Relation to Therapeutic Effectiveness, Am. J. Syph., Gonor. & Ven. Dis. **24**:201 (March) 1940.

4. Baehr, G.: Massive Arsenotherapy in Early Syphilis by the Continuous Intravenous Drip Method, Arch. Dermat. & Syph. **42**:239 (Aug.) 1940.

5. Leifer, W.: Massive Arsenotherapy in Early Syphilis by the Continuous Intravenous Drip Method: Technic, Arch. Dermat. & Syph. **42**:245 (Aug.) 1940.

6. Kolmer, J. A.: Principles and Practice of Chemotherapy with Special Reference to the Treatment of Syphilis, Philadelphia, W. B. Saunders Company, 1926, p. 346.

The intravenous administration of both compounds in single doses by the syringe method had a more prompt effect on S. pallida in testicular lesions than comparable total dosage by the drip method.

The minimal curative doses of both compounds by the two methods of administration were practically the same, being about 0.02 Gm. of neoarsphenamine and 0.005 Gm. of mapharsen per kilogram of body weight.

From the results observed in the treatment of early syphilis of rabbits, it is suggested that the administration of seven intravenous injections of neoarsphenamine in doses of 0.6 Gm. at daily intervals (total 4.2 Gm.) or of twenty intravenous injections of mapharsen in doses of 0.06 Gm. at daily intervals (total 1.2 Gm.) may be as effective in the treatment of early syphilis of human beings as the continuous intravenous drip method of administration, with the chances of its being less toxic and less dangerous.

NOTE.—Since this report was submitted for publication subsequent experiments have shown that the minimal curative dose of the same lot of neoarsphenamine given daily by intravenous injection by the syringe method for five days in succession varied from 0.004 to 0.005 Gm. per kilogram of body weight in the treatment of acute syphilitic orchitis of rabbits. The total minimum curative dose, therefore, was between 0.02 and 0.025 Gm. per kilogram, practically identical with the total minimum curative dose given by the continuous intravenous drip method and by the single intravenous injection method.

Similar results were observed with the same lot of marpharsen. By the syringe method of administration the minimal curative dose was 0.001 Gm. per kilogram of body weight given daily for five days in succession. The total minimal curative dose, therefore, was 0.005 Gm. per kilogram, practically identical with that given by the continuous intravenous drip method and by the single intravenous injection method.

NUMMULAR ECZEMA

ITS CLINICAL PICTURE AND SUCCESSFUL THERAPY

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Allergic eczema in its various phases of sensitization to contact substances, food, inhalants, bacteria and fungi has detracted interest from other forms of eczematous dermatitis which could not be explained by an allergic mechanism. Nummular eczema is such an entity, known since Devergie [1] first described it. It was later called neurotic eczema by Brocq and was described by Pollitzer [2] as "recurrent eczematoid affection of the hands." Chipman [3] presented a clearcut clinical picture and discussed the history and differential diagnosis. In the discussion of Chipman's paper, Pollitzer expressed his view and called the eruption sui generis and worthy of investigation. Becker and Obermayer,[4] in their truly modern book, called nummular eczema a type of exudative neurodermatitis of Kreibich. These authors referred justly to the misunderstandings which have beset dermatologists in the discussion of eczema.

CLINICAL PICTURE

The name nummular eczema denotes the appearance of the discrete, coin-shaped patches of this condition. The lesions are erythematous plaques studded with small vesicles or papulovesicular lesions. Oozing from numerous small points (status punctosus) leads to the formation of crusts. Edema in the acute stage and thickening and scaling in the more chronic phase complete the rather uniform picture of these lesions.

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1. Devergie, M. G. A.: Traité pratique des maladies de la peau, ed. 2, Paris, V. Masson, 1857, p. 238.

2. Pollitzer, S.: A Recurrent Eczematoid Affection of the Hands, J. Cutan. Dis. **30**:716 (Dec.) 1912.

3. Chipman, E. D.: Differentiation of Sharply Outlined Eczematoid Patches, Arch. Dermat. & Syph. **32**:605 (Oct.) 1935.

4. Becker, S. W., and Obermayer, M. E.: Modern Dermatology and Syphilology, Philadelphia, J. B. Lippincott Company, 1940.

Although the patches are frequently the size of a small or large coin, an extensive area may be covered by an individual patch; even then the discrete outline is present. It seems as though the lesions develop as solid plaques, which further enlarge, frequently by confluence with satellite papulovesicular lesions near their periphery. If under local treatment the eczema improves, a recurrence in the same plaque will manifest itself by the springing up of numerous small papules and vesicles on the residual erythema, reminding one of a fixed eruption.

The location and distribution are of utmost importance. The dorsa of the hands and fingers, the extensor surfaces of the forearms, arms, legs and thighs, the backs of the feet and the shoulders are the sites most frequently involved, in the order mentioned. The lateral and volar surfaces of the fingers may be affected, especially in conjunction with lesions on the dorsa of the fingers. As pointed out by Becker and Obermayer,[4] in these locations there may be a resemblance to pompholyx. The face may occasionally be the site of dry or exudative patches. The more diffuse crusted eczema of the face and neck, described by Becker and Obermayer as a type of exudative neurodermatitis and distinct from contact eczema, especially on account of the normal appearance of the eyelids, will be referred to in the history of a case.

The pruritus of patients with nummular eczema varies. In some cases it is severe; in others it is particularly noticeable at the outbreak of new lesions. The patient scratches and is aware of the fact that by doing so he aggravates the condition and may produce new crops of vesicles. This isomorphous reaction to mechanical insults can easily be observed. It is well known that in many cases nummular eczema appears or recurs in the cold season and clears up in summer, and this has led to the name winter eczema, but the beneficial effect of the warm weather cannot always be relied on.

DIFFERENTIAL DIAGNOSIS

The differentiation of a widespread nummular eczema from contact dermatitis is comparatively easy. Eczema due to continuous or repeated contact with an allergen is a diffuse eruption, especially on the dorsa of the hands, spreading to the flexor surfaces of the wrists and forearms, the cubital fossae and the trunk, especially the flanks. On the lower extremities, the dorsa of the feet, the ankles, the popliteal regions and the inner surfaces of the thighs are affected. The polymorphous picture reflecting the stage of sensitization in contact eczema is in contrast to the uniform lesions of nummular eczema. Confluence of vesicles and more diffuse oozing further distinguish contact dermatitis. If the lesions of nummular eczema are confined to the hands, a differential diagnosis, especially from eczema due to occupational contact, may give

rise to difficulties. Again the multiple orbicular patches of nummular eczema are in contrast to the diffuse eruption due to contact, which often shows the chronic stages of lichenification together with flaring up or spreading of acute lesions.

In differentiating nummular eczema from dermatophytosis it is well to remember the tendency to central healing and peripheral progression common to both dermatophytosis and dermatophytid. Besides, the volar surfaces of the hands and fingers are the favorite sites of fungus infection and with few exceptions dominate the picture even though the dorsa of the hands or the webs of the fingers are affected.

A condition which may bear considerable resemblance to nummular eczema, especially in the early discoid stage, is chronic lichenoid and discoid exudative dermatosis, described by Sulzberger and Garbe.[5] Usually the discoid and exudative patches are more numerous, involving both the flexor and the extensor surfaces of the extremities, and as the disease advances the eruption on the trunk becomes more and more extensive. Lesions on the bridge of the nose, in the perioral region, on the ears and especially on the penis and scrotum favor the diagnosis of chronic lichenoid and discoid exudative dermatosis. Severity of the itching, lack of response to topical applications, a psychogenic background and the sex of the patient further support the diagnosis.

ASTEATOSIS AND ASTEATOTIC ECZEMA AND ITS RELATION TO NUMMULAR ECZEMA

To quote Becker and Obermayer[4]: "The asteatotic skin appears dry, slightly scaly and erythematous, in isolated plaques, or over large areas, the surface of which has the appearance of very superficial fissuring." The sites of predilection are the hands, which are chapped, the extensor surfaces of the extremities, the shoulders and the buttocks. Eczema craquelé, eczema rhagadiforme and bath dermatitis[6] are names frequently used. The condition is worse in the winter, when the secretion of the sweat and oil glands is normally lowered, and is aggravated by cold, wind, bathing and alkalis. Exposure and friction are responsible for chapping of the skin on the anterior surfaces of the ankles and over the achilles tendon.

The observation that nummular eczema is frequently associated with a dry skin and even asteatotic eczema seemed to me of some significance. The location on the extremities, the occurrence in the winter and the aggravating effect of alkalis and baths are features common to nummular

5. Sulzberger, M. B., and Garbe, W.: Nine Cases of a Distinctive Exudative Discoid and Lichenoid Chronic Dermatosis, Arch. Dermat. & Syph. **36**:247 (Aug.) 1937.

6. Nomland, R.: Generalized Itching, J. Iowa M. Soc. **30**:468 (Oct.) 1940.

eczema and to asteatosis. Therefore, I assumed that asteatosis was a predisposing factor in nummular eczema. Although Kreibich [7] did not particularly refer to nummular eczema, he stated that: "Insufficient oiliness (asteatosis) may predispose to eczema through dryness and increased irritability. Skin the quality of which is altered by occupational exposure to water, soap and alkali and also skin dried out (by flour, dust or powder) and senile skin may predispose to eczema. Frequently the makeup of the skin is only the expression of trophic changes due to internal diseases and anomalies of metabolism."

ASTEATOSIS AND VITAMIN A

In recent years dermatologists have learned to recognize the subclinical degrees of vitamin deficiency. The description of typical avitaminosis A by Eddy and Dalldorf [8] leaves no doubt that asteatosis of the skin is an early and constant manifestation of this deficiency.

Well known facts about the asteatotic "dry" skin point to the role of vitamin A for the maintenance of a normal skin. The dry shriveled and scaly skin of the aged assumes a new meaning if viewed from the now established fact that age predisposes to subclinical vitamin deficiencies. That the dry and itchy skin of the diabetic person may be due to a vitamin A deficiency can be gathered from the frequency with which impaired hydrolysis of beta carotene in the liver of a diabetic patient has been demonstrated in recent studies. The increased demand for vitamin A in hyperthyroidism and indications that hypothyroidism may interfere with vitamin A formation are further facts which might correlate the dry skin of thyroid dysfunction with vitamin A utilization. Chronic jaundice and prolonged febrile disease have a depleting effect on the vitamin A storage of the human body, and in both conditions a dryness of the skin is frequently seen.

VITAMIN A THERAPY FOR NUMMULAR ECZEMA

As mentioned before, one frequently encounters signs of asteatosis in patients with nummular eczema. These consist of dryness and asteatotic scaling on the extensor surfaces of the extremities or may even lead to the development of frank lesions of asteatotic eczema (*état craquelé*). The question of whether the unfavorable effect of the cold season on asteatosis as well as on nummular eczema is due to the lowered vitamin A content of winter food or to the decreased function of the oil and sweat glands is justified. Both factors may be responsible for the seasonal occurrence of these changes in the skin.

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7. Kreibich, C.: Ekzeme und Dermatitiden, in Jadassohn, J.: Handbuch der Haut- und Geschlechtskrankheiten, Berlin, Julius Springer, 1927, vol. 6, pt. 1.

8. Eddy, W. H., and Dalldorf, G.: The Avitaminoses, Baltimore, Williams & Wilkins Company, 1941.

The use of vitamin A in the treatment of nummular eczema thus appeared rational, and I began to administer effective doses of vitamin A in conjunction with other therapeutic measures during the winter of 1939-1940. The results were so convincing that the therapeutic outlook for nummular eczema so well expressed by Wise and Wolf [9] seemed greatly improved. These authors said of nummular eczema: "There is pronounced tendency to recurrence and often the eruption is resistant to treatment." I do not hesitate to state that the patients with nummular eczema receiving vitamin A responded promptly to treatment and that a follow-up study of a limited number of cases showed that the tendency to recur was decreased and that if the condition did recur it was milder and could be promptly controlled by increased dosage of vitamin A or by other measures furthering the absorption and action of this vitamin.

Another series of patients with nummular eczema were treated at the Vanderbilt Clinic and in private practice during the winter of 1940-1941 and the results further demonstrated the value of vitamin A. The treatment was as follows:

1. Vitamin A was given in amounts from 30,000 to 75,000 U. S. P. units per day for therapeutic doses and 25,000 U. S. P. units or less for maintenance doses.

2. Topical application of a bland ointment, like a cooling cream with an oxycholesterol-petrolatum base, a naftalan zinc paste or a zinc oxide ointment with lard as a base, and 3 per cent colloidal coal tar in a vanishing cream base were prescribed.

3. The use of soap and water for cleansing was discouraged while active lesions were present. Housewives were advised to wear rubber gloves while doing their work.

4. In some cases intravenous injections of calcium gluconate and general irradiation with artificial sunlight, with avoidance of exposure of the parts affected by eczema, were used.

It is obvious that these measures had been used previously in the treatment of nummular eczema, and most of these patients had been treated extensively before. The new feature of the recommended therapy was the oral administration of moderately large doses of vitamin A, and the favorable results obtained are attributed primarily to this vitamin. The tar ointment mentioned seemed particularly well suited as a topical application, but good results were obtained without its use, and in some cases its application had to be discontinued on account of irritation.

It was not necessary to use wet compresses or bandages for any of the patients, and even those with extensive eruptions were treated in an

9. Wise, F., and Wolf, J.: Problems in Diagnosis and Treatment of Recurring Vesicular Eruptions of the Hands, New York State J. Med. **40**:1573 (Nov. 1) 1940.

ambulatory manner and were able to continue their occupation or return to it in a short time. The obstacles presented by housework and laundry work were recognized but were overcome more easily with this therapy, and I consider this success as an important test for the value of this treatment.

If asteatosis of the skin due to lack of vitamin A was responsible for the increased susceptibility of the epidermis to eczematogenous stimuli, the correction of this epidermal anomaly should reduce the irritability of such a skin. Such a mechanism will explain the favorable action of a vitamin on an eczematous eruption which in itself lacks the characteristics of the well known deficiencies. It also seems clear that the functional disturbances of the skin leading to chronic eczema required additional therapeutic measures for their adjustment to normal conditions.

REPORT OF CASES

CASE 1.—Mrs. G. S., aged 33, a patient of Dr. William H. Button Jr., was first seen on Nov. 14, 1940, with an eruption of three months' duration. She had suffered two attacks of an acute eruption, which was diagnosed as dermatitis venenata, in May and July 1940. She had been on a diet of her own choosing for years, eliminating orange juice, milk and potatoes. The thyroid gland had been enlarged since the age of puberty. In recent months she had complained of nervousness and palpitations. She did not drive her automobile at night on account of difficulties in vision (night blindness).

The eruption consisted of sharply defined patches on the dorsa of several fingers of both hands. They were erythematous, scaly and surrounded by fresh vesicles in a nearly normal skin. Similar smaller patches were present in the web of the right index finger and on both arms. On the dorsa of the feet were erythematous papular plaques of irregular outline.

The blood count revealed 4,776,000 erythrocytes, 6,500 leukocytes and a color index of 1.0, with occasional macrocytes. The vitamin levels of the blood were as follows: carotene, 0.4 Lovibond yellow units; vitamin A, 1.7 Lovibond blue units, and ascorbic acid, 0.36 mg. The prothrombin time was eighteen seconds. The basal metabolic rate was + 23 per cent, and the medical diagnosis was hyperthyroidism.

After ten days of medication with 75,000 U. S. P. units of vitamin A and 2 mg. of riboflavin per day and topical application of a cooling salve, the eruption subsided except for a few erythematous and dry patches on the hands. There was a tendency toward chapping and fissuring, which was improved by a cod liver oil ointment. Continuation of vitamin A therapy combined with intramuscular injections of liver extract and calcium gluconate and local applications of a colloidal 3 per cent coal tar ointment removed the remaining roughness of the previously affected area on the hands.

In January there was an eruption on the hands suggesting a contact dermatitis. A patch test with onion oil gave a positive reaction consisting of erythema and papules, and the eruption responded to roentgen ray therapy (200 r). Treatment was discontinued by February 1. When she was seen on April 4 the fingers were slightly chapped, but there had been no recurrence of the nummular eczema on

the hands, arms and feet. The patient's general health was greatly improved. She was less nervous, but the vitamin A therapy had not changed the basal metabolic rate.

CASE 2.—Mrs. F. H., aged 37, was first seen on March 23, 1937. In addition to a mild acne of the face and a lesion of lichen simplex of the back, she complained of an itchy eruption on both hands. This eruption consisted of circumscribed erythematous vesicular patches on the dorsa of the hands. Patch tests with various substances gave negative results, and the condition was diagnosed as nummular eczema. Treatment with tumenol, with tar ointments and finally with roentgen rays was unsuccessful, and the patient discontinued treatment.

On May 13, 1940 she again consulted me about her eruption. She had been treated by several dermatologists without improvement. At the beginning of a pregnancy in 1938 the eczema disappeared completely but recurred with increased severity in the autumn of 1939. She had spent several weeks in a hospital under the care of a dermatologist. Numerous tests for allergy had been performed, with negative results. Only constant bandaging with a naftalan ointment gave temporary relief.

She presented the typical picture of nummular eczema with erythematous, vesicular and crusted patches on the backs of the fingers, dorsa of the hands and extensor surfaces of the forearms. The legs had been affected with a dry and cracking eczema but were clear at the time of examination.

Treatment with 50,000 U. S. P. units of vitamin A per day, injections of calcium gluconate and general ultraviolet irradiation, combined with local applications of a 3 per cent colloidal coal tar ointment in a vanishing cream base, resulted in prompt improvement. The bandages were discarded within a few days, and by June 17, 1940 the patient was well and discontinued treatments. She was able to bathe her child without using rubber gloves.

On October 8 she had a mild relapse consisting of scattered vesicular lesions, particularly on the dorsa of the hands. Treatments were given as on the previous occasion, at weekly intervals, and, in addition to vitamin A, vitamin B complex was prescribed. Therapy was discontinued on November 26, since the hands and arms were free of the eruption and the patient felt better generally.

From November 26 to the present the patient has been taking vitamin A and has not required medical care.

CASE 3.—J. C., a physician aged 29, was admitted to the Presbyterian Hospital on Feb. 29, 1941, on account of an eczematous dermatitis. The eruption had begun on the face ten weeks previous to admission and had spread rapidly to the neck and the upper part of the trunk. There was no history of allergy. Patch tests with suspected contact substances gave negative results.

There was a diffuse erythematovesicular eruption on the face and neck limited by a sharp border. The skin of the eyelids was normal. On the extensor surfaces of the arms were large patches of an eczematous dermatitis. There was a moderate asteatosis of the extensor surfaces of the extremities and on the buttocks.

A cooling salve was applied locally; 75,000 U. S. P. units per day of vitamin A was given orally, and calcium gluconate was administered intravenously. After nine days the patient was sufficiently improved to leave the hospital.

Coal tar ointment was used only on the arms since it proved too irritating on the face. With a vitamin A regimen, increased amounts of butter and milk (of which the patient had taken little before the outbreak of eczema), local application of the cooling salve and four injections of calcium, the eruption cleared

up completely by April 9, and when he was seen for a check-up on May 23, 1941, the patient's skin was normal.

CASE 4.—J. W., a furniture salesman aged 73, was seen on Feb. 26, 1941, at the Vanderbilt Clinic. He presented an eruption on the hands, forearms and ankles of three months' duration. The lesions were erythematous, papulovesicular patches with moderate scaling. He was treated with a hydrous wool fat cooling salve, naftalan ointment and paste of zinc oxide N. F. and received one roentgen ray treatment.

When he was seen on March 13 the eruption had spread farther, to the arms, legs and knees, and the lesions had become worse.

A diagnosis of nummular eczema was made, and 75,000 U. S. P. units of vitamin A prescribed as a daily dose. Local therapy consisted of a cooling salve with cholesterolized petrolatum as a base.

On March 26 there was a remarkable improvement. There was a residual patch of eczema on the left leg, and the hands were only red and chapped. The dose of vitamin A was reduced to 50,000 U. S. P. units. On April 2 there was slight redness on the dorsa of the hands and a few dry scaly patches were seen on the forearms and ankles.

The hydrous wool fat cooling ointment was prescribed again, and on April 9 the eruption was much worse. A sensitization to hydrous wool fat was suspected, and lard was used as a base for zinc ointment.

With this treatment and continued vitamin A therapy the eruption cleared up in one week. Cod liver oil was substituted for the vitamin A concentrate. After a week there was a mild flare-up, and the patient again received 50,000 U. S. P. units of vitamin A. When he was seen two weeks later the skin was normal except for small dry patches on the heels. On return visits, May 21 and May 28, there were no signs of nummular eczema.

A patch test with hydrous wool fat gave a negative result.

Of 24 patients systematically treated and sufficiently followed during their course of therapy, as well as afterward, satisfactory results were obtained in 18. Of the remaining 6, 2 (table 1, E. L. and D. L. C.) were greatly improved, 1 of them after the eruption had lasted for two years continuously; 1 patient was improved to some extent, and 3 did not respond consistently to the treatment and other therapeutic measures had to be used (reports of these 4 not included in table 1 or in report of cases).

COMMENT

A comparison of the patient's previous histories leaves little doubt about the advantages of the treatment with vitamin A concentrates. The difficulties encountered in some cases seem to reflect the complications inherent in the utilization of vitamin A by the human body. In 1 case the combination with bile salts was apparently helpful. In other instances the addition of riboflavin, alone or in the vitamin B complex, proved of value. In another case the addition of vitamin C gave better results than vitamin A alone. In 1 case of nummular eczema the patient had hyperthyroidism. She had low levels of vitamin A in the blood and complained, when questioned, of difficulties in night driving.

TABLE 1.—*Summary of Data on Patients with Nummular Eczema Treated with Vitamin A*

Patient, Age and Occupation	Eczema Duration	Location	Clinical Picture	Treatment	Result
Mr. W. S. S., aged 73, business executive; May 13, 1940	Four weeks; attack in 1936 of four months' duration	Extensor surfaces of upper and lower extremities	Nummular patches of vesicular crusted eczema, dry skin, eczema craquelé	Vitamin A, 30,000 U. S. P. units per day; coal tar ointment; general ultraviolet irradiation; injections of calcium	Prompt improvement; discharged June 26, 1940; no recurrence by Jan. 20, 1941; maintenance dose of vitamin A recommended
Mrs. M. O., aged 30, houseworker; May 7, 1940	Two years, recurring	Dorsa of hands and wrists and elbows	Nummular plaques of papular vesicular eczema	Vitamin A, 30,000 U. S. P. units: coal tar ointment, calcium	Response in one week, discharged July 16, 1940; well until May 1941; recurrence reported by mail from Florida
Mrs. M. B., aged 35, housewife; Nov. 18, 1939	One and one-half years extensively treated, including roentgen ray therapy	Dorsa of hands and fingers, elbows and thighs	Nummular patches of papular vesicular eczema, also dyshidrotic vesicles in palms; highly nervous	Vitamin A, 25,000 to 50,000 U. S. P. units; coal tar ointment; injections of calcium; general ultraviolet irradiation	Prompt response but mild recurrence under treatment; discharged April 17, 1940; follow-up January 1941; well satisfied; occasional mild cutaneous irritation; maintenance doses of 10,000 U. S. P. units of vitamin A
Mrs. C. D., aged 49, housewife; Feb. 21, 1940	Ten years; recurrent, better in summertime	Dorsum of right hand; two months on left hand	Diffuse, erythematous, dry scaly and infiltrated patches with recurrent vesicles	Vitamin A, 20,000 U. S. P. units; coal tar ointment; injections of calcium; general ultraviolet irradiation	Discharged April 1, 1940; seen April 1941; no recurrence of eczema; acute contact dermatitis cleared by roentgen ray therapy in ten days; since January 1941 maintenance dose of 10,000 U. S. P. units of vitamin A
Mr. W. M. H., aged 87; Nov. 19, 1940	Six to eight years; especially in winter	Extensor surfaces of extremities	Asteatosis of skin, eczema craquelé of legs and arms, lichen pilaris and pruritus	Vitamin A, 75,000 U. S. P. units; oxycholesterol-petrolatum cream	Asteatosis and pruritus responded in eight days; maintenance doses of vitamin A and vitamin B complex
Mr. T. J., aged 65, electrical engineer; April 14, 1940	Eight weeks	Extensor surface of upper and lower extremities, shoulders and face	Erythematous vesicular patches and clusters of vesicles; asteatosis of skin; eczema craquelé on legs	Vitamin A, 30,000 to 75,000 U. S. P. units; injections of calcium; general ultraviolet radiation (previously, liver injections, riboflavin and hospitalization); use of coal tar ointment discontinued on account of hypersensitivity	Greatly improved in four days; then mild recurrence; November and December 1940 treated for recurrent widespread scattered papules and vesicles, complicated by irritation from coal tar ointment; vitamin A increased to 75,000 U. S. P. units + bile salts + vitamin B complex + vitamin C; follow-up May 7, 1941: free from eruption; slight asteatosis of lower parts of the legs (no eczema);maintenance doses of vitamin A
Mrs. I. E. V., aged 26, houseworker; June 10, 1940	Ten years recurrent, worse in winter, not entirely clear in the summer	Dorsa of hands, fingers and forearms	Nummular patches of erythematous papular vesicular eczema	Vitamin A, 30,000 U. S. P. units; coal tar ointment	Follow-up August, September and October 1940: clear, general health better; April 23, 1941, follow-up: occasional slight outbreak
Mrs. I. P.;	Five and one-half	Dorsa of hands,	Erythematous ves-	Vitamin A, 75,000 U. S. P.	Clear in six weeks; slight

Mrs. I. P.; Jan. 15, 1941	Five and one-half years except during the summer; four years intensive treatment in same clinic	Dorsa of hands, fingers and forearms	Erythematous vesicular edematous patches and discrete papulovesicular lesions	Vitamin A, 75,000 U. S. P. units; cooling salve; coal tar ointment; injections of calcium; riboflavin for short period	Clear in six weeks; slight recurrence, responding to addition of riboflavin; May 21, 1941 slight residual dry patch on thenar of right thumb; skin clear; patient in better health
Mrs. C. A., aged 46, housewife; Jan. 27, 1941	One year; slightly improved during summer	Legs and dorsa of hands, forearms and fingers	Nummular patches of erythematous vesicular and crusted eczema	Vitamin A, 50,000 to 75,000 U. S. P. units; Lassar's paste; use of coal tar ointment discontinued March 12; yeast concentrate	Response in two weeks; April 9, 1941, no eczema, skin slightly irritated by soap; general health much improved
Mrs. P. Z., aged 26, housewife; Feb. 5, 1941	Seventeen months; one year of treatment at same clinic	Dorsa of hands and fingers, forearms, arms and legs	Erythematous scaly vesicular patches	Vitamin A, 75,000 U. S. P. units; naftalan ointment; coal tar ointment; cooling salves	Response in one week; completely clear after five weeks; April 9, 1941, follow-up satisfactory
Mr. E. L., aged 19, newspaper dealer; Jan. 22, 1941	Two years; no improvement in summer; extensive allergic studies and therapy	Dorsa of fingers and hands, extensor and flexor surfaces of wrists, spreading to forearms; also forehead	Nummular patches of erythematous edematous scaly crusted eczema; diffuse lichenification on hands; obesity and lichen pilaris	Vitamin A, 75,000 U. S. P. units; cooling salve; coal tar ointment; vitamin A ointment; vitamin C, 100 mg.	Nummular eczema cleared in two months; lichenification much improved; May 7, 1941, flare-up after reduced vitamin A dosage; May 21, flare-up cleared up with 75,000 U. S. P. units of vitamin A, vitamin B complex and 100 mg. ascorbic acid
Mrs. D. L. C., aged 24, housewife; Feb. 5, 1941	Eighteen months	Dorsa and lateral surfaces of fingers	Patches of erythematous, scaly, fissured, crusted eczema	Vitamin A, 75,000 U. S. P. units; naftalan ointment; coal tar ointment	Irritation from tar and other topical applications; best response to vitamin A alone: condition improved
Mrs. T. J. D., aged 34, housewife; Feb. 24, 1941	Three months	Dorsa of hands and extensor surface of forearm	Nummular patches of erythematous edematous, vesicular eczema; lichen pilaris on arms	Vitamin A, 50,000 to 75,000 U. S. P. units; naftalan ointment; coal tar ointment	Cleared up in one month; remained clear except for slight chapping despite house and laundry work
Mrs. L. B., aged 31, housewife; March 10, 1941	Two years; recurrent, especially in winter	Extensor surfaces of arms, legs and thighs	Nummular patches of erythematous, scaly and vesicular eczema; asteatosis of lower extremities; lichen pilaris of arms	Vitamin A, 75,000 U. S. P. units; cooling salve; coal tar ointment; injections of calcium; vitamin B complex; general ultraviolet irradiation	Rapid improvement; discharged after seven weeks
Mrs. M. K., aged 24, housewife (no housework); March 5, 1941	Twelve years especially in winter	Dorsa of hands and anterior surfaces of ankles	Nummular patches of erythematous, vesicular eczema; asteatosis of extremities with pruritus; lichen pilaris	Vitamin A, 75,000 U. S. P. units; tumenol, coal tar and vitamin A ointments; injections of calcium; ultraviolet irradiation	Prompt improvement; discharged after six weeks
Mr. A. D., aged 53, business man; Feb. 28, 1941	Six weeks	Dorsa of hands, extensor surfaces of upper and lower extremities, shoulders	Extensive eruption of nummular patches from size of dime to size of palm, erythematous, edematous and vesicular, with oozing points and crusting, perlèche-like lesions of mouth; dry, scaly eruption of hands	Vitamin A, 75,000 U. S. P. units; riboflavin, 3 mg.; cooling salve; coal tar ointment; injection of calcium; general ultraviolet irradiation	Almost clear in one week; May 21, 1941: relapse after discontinuance of vitamin A therapy by patient; cleared up; maintenance dose of vitamin A, 25,000 U. S. P. units: only mild eruptions; no medical care

These and other observations conform with well known facts about utilization of vitamin A. Normal gastrointestinal function and normal bile are essential for absorption. It seems probable that a well functioning liver is important not only for the hydrolysis of beta carotene but also for the proper storage and mobilization of vitamin A itself.

Kimble and Gordon [10] showed that several otherwise normal persons with low biophotometric readings and low vitamin A levels in the blood who were not influenced by daily doses of 200,000 U. S. P. units of vitamin A for two months again had normal biophotometric readings and vitamin A levels in the blood when riboflavin was added to the treatment. In other instances ascorbic acid gave satisfactory results.

This interrelation of vitamins can be readily understood when their role as building stones for important enzymes of carbohydrate, fat and

TABLE 2.—*Determinations* of Vitamins A and C and Carotene in the Blood of Patients Treated with Vitamin A*

Patient	Diagnosis	Blood Carotene Lovibond Yellow Units	Blood Vitamin A, Lovibond Blue Units	Blood Vitamin C, Milligrams	Prothrombin Time, Seconds
Normal range		0.3 to 1.7	1.0 to 3.3	0.5 to 1.6	18 to 30
G. T.	Nummular eczema	0.2	0.9	0.3	18
Dr. B.	Nummular eczema	0.6	1.8	0.51	18
M. P.	Nummular eczema; ariboflavinosis ?	0.4	1.2	0.34	19
I. P.	Nummular eczema	0.4	2.2	0.38	..
R. W.	Nummular eczema	0.3	1.4	0.72	17
M. L.	Generalized asteatosis; folliculitis; ichthyosis	0.3	1.0	0.93	18
E. L.	Nummular eczema	0.4	1.9	0.51	..
G. S.	Nummular eczema; hyperthyroidism	0.4	1.7	0.36	18

* No conclusions can be drawn from these examinations, since their number is too small and the values are, according to Dr. Mackie, within the lower limits of the normal range.

probably protein metabolism is remembered. Esterification of vitamin A with fatty acids has been hypothetically postulated and fat-free diets have been found to interfere with vitamin A utilization in the experimental animal. The relation of vitamin A to fat metabolism may be of considerable importance for the understanding of the disturbances of keratinization in the epidermis. In this connection I might mention that in several of my cases of nummular eczema hydrous wool fat or adsorption bases containing cholesterol aggravated the condition. Whether this is due to an idiosyncrasy or to more intricate chemical processes relating to cholesterol and vitamin A will be further investigated.

Determinations of vitamin A and carotene levels in the blood were made in only a limited number of cases, and the data are represented in table 2.

10. Kimble, M. S., and Gordon, E. S.: The Importance of Riboflavin and Ascorbic Acid in the Utilization of Vitamin A, J. Biol. Chem. **128**:lii (June) 1931.

Lack of equipment prevented studies pertaining to night blindness. The value of these laboratory observations is undisputed, but the response of a disease to adequate doses of a synthetic product or concentrate of a vitamin in a series of cases is important evidence of vitamin deficiency. Recent experimental work on vitamin A levels in the blood of rats by Lewis, Bodansky, Falk and McGuire [11] has demonstrated that a minimal normal level in the blood may be maintained with a considerable variation of storage in the liver. It is a well known fact that in pellagra and canine blacktongue the coenzyme level of the blood indicating the nicotinic acid supply may show low normal values while liver and muscle show the depletion by coenzyme contents far below the norm.

It is therefore possible that the skin is not receiving a sufficient amount of vitamin A although the level in the blood is within the normal range. That there are predisposing and eliciting factors in the cutaneous organ itself is further exemplified by the dermal manifestations of pellagra. The nicotinic acid deficiency of the skin becomes clinically manifest only in locations exposed to the sun or to friction, pressure and stretching. An increased load on the function of the integument by exposure to cold, steam heat, alkalis and water, friction and scratching could be incriminated for eliciting visible manifestations of an otherwise latent deficiency in vitamin A. The distribution of nummular eczema further suggests locations with a high demand on adequate function of the sebaceous glands.

NUMMULAR ECZEMA AND "DERMATITIS OF THE HANDS IN HOUSEWIVES"

The effect of water, soap and alkalis on nummular eczema raises the question of whether the condition called dermatitis of housewives and domestics is nothing but nummular eczema. This is suggested by the high incidence of nummular eczema among women and is borne out further by the observations of Jordon, Dolce and Osborne.[12] These authors described the cardinal features of eczema due to soaps and allied cleansers as follows:

> Most patients . . . were either completely free from the condition or improved during the warm months. A high precentage of the patients noted improvement during periods of vacation, illness or other lapses in routine when soap and cleansers were used infrequently. . . . Nearly all patients reported

11. Lewis, J. M.; Bodansky, O.; Falk, K. G., and McGuire, G.: Relationship of Vitamin A Blood Level in the Rat to Vitamin A Intake and to Liver Storage, Proc. Soc. Exper. Biol. & Med. **46**:248 (Feb.) 1941.

12. Jordon, J. W.; Dolce, F. A., and Osborne, E. D.: Dermatitis of the Hands in Housewives: Role of Soap in the Etiology and Methods for Its Prevention, J. A. M. A. **115**:1001 (Sept. 21) 1940.

periods of exacerbation and quiescence, and many patients had periods of complete freedom lasting from a week to several years.

In most instances, the dermatitis was vesicular and was confined to areas on the hands. . . . It seldom involved the entire dorsal aspects of the hands. Most patients had patches on the dorsum of the hands with involvement of one or more fingers. . . .

The eczema in many of our cases had been erroneously diagnosed as ringworm.

The authors spoke of the limited value of patch tests in their cases and had previously postulated an eczematous response to patch tests with soap solutions in dilutions greater than 1:100 as evidence of allergy. I therefore recommend the division of the patients with eczema on the hands susceptible to soap into two groups: (1) those with diffuse dermatitis, a condition conforming in the clinical picture and reactions to patch tests to the general conception of contact dermatitis, and (2) those with eczema craquelé and vesicular eczema appearing in nummular patches, alleviated by the elimination of use of soap and water and by the onset of the warm season. The latter group should be studied in relation to vitamin A deficiency and to the condition's response to vitamin A therapy. The interesting clinical studies of Blank [13] on fatty acids and those of Jordon, Dolce and Osborne [12] may shed more light on the disturbances of the metabolism of the skin responsible for a certain type of soap dermatitis. In some of my cases sulfonated oils were recommended as detergents, but most of the clinic patients were not able to interrupt their household duties, and even under these unfavorable conditions vitamin A therapy was often effective. The implications of a nummular eczema occurring in, for instance, hairdressers, bartenders, dishwashers and tanners, subject to compensation, should be discussed, especially in regard to persons presenting such a clinical picture without yielding any positive reactions to patch tests in a careful allergic study. This may further reduce the doubtful value of positive reactions to trichophytin in the absence of clinical and microscopic evidence of dermatophytosis.

SUMMARY AND CONCLUSIONS

The clinical picture of nummular eczema is evaluated and the differential diagnosis discussed.

The disease is considered an entity, and an attempt has been made to show that asteatosis of the skin is a predisposing cause for eczema craquelé and nummular eczema.

Since asteatosis is known to be an early sign of vitamin A deficiency, the effect of therapeutic doses of vitamin A on nummular eczema

13. Blank, I. H.: Action of Soap on Skin, Arch. Dermat. & Syph. **39**:811 (May) 1939.

has been studied. It has been found that vitamin A has a favorable action on the therapeutic response of nummular eczema, simplifies its treatment and may be helpful in preventing recurrences.

Vitamin A therapy of nummular eczema should be tried in cases of eczematous dermatitis occurring in circumscribed plaques in which an allergic mechanism cannot be established by patch tests and in cases of eczematous lesions of the fingers and hands which are not due to a local or distant fungous infection.

The question of compensability for nummular eczema occurring in industrial workers is raised.

No attempt has been made to study the mechanism of hypersensitivity which leads to the production of a vesicular eczema without a demonstrable allergic mechanism. The eczematous reaction of the asteatotic skin to mechanical stimuli, especially friction and scratching, and to chemical ones, like soaps and alkalis, requires further investigation and better interpretation. An increased irritability of the epidermal nerve endings due to an alteration of the epithelium caused by vitamin A deficiency may be used as a working hypothesis, giving a new meaning to Kreibich's neurodermatitis theory when applied to nummular eczema.

The vitamin determinations were made by Dr. Thomas T. Mackie, Director of the Gray service of the Roosevelt Hospital, and Miss Rosalie Travers, of the Gray Laboratories.

ABSTRACT OF DISCUSSION

Dr. Samuel W. Becker, Chicago: It is appropriate that Dr. Gross, a pupil of Kreibich, should study nummular eczema. I prefer to class this disorder as one form of exudative neurodermatitis of Kreibich. Kreibich maintained that this variety of eczema depended in some way on disturbance of function of the cutaneous nerves. The typical plaque has been described as vesicular, a statement which may be open to criticism, since macroscopic vesicles are plainly visible only if the process involves the thicker skin on the sides and backs of the fingers and on the palms, where the condition seems to be identical with dyshidrosis. Otherwise the vesicles are visible only on microscopic section. I believe that this feature definitely distinguishes nummular eczema from dermatitis due to an external irritant, which is characterized by macroscopic vesicles and even bullae, and is more diffuse, unless the irritant has been applied to a limited area, as in some cases of eczema in dentists.

One must realize that recognized clinical characteristics may be evaluated in different ways. Jordon, Dolce and Osborne interpreted improvement in dermatitis of the hands during vacation, illness or other lapses in routine to less frequent use of soap and cleansers. Using the same data, I would interpret the change as due to the beneficial influence of rest and relaxation. The improvement of nummular eczema during the warm months is in line with remission in all the neurodermatoses during that period of the year. I do not believe that nummular eczema has a definite relation to asteatosis, which is never exudative, although the former may be more frequent in blonds, who have a drier and more delicate skin. The designation "winter eczema" is more applicable to asteatotic lesions than to those of nummular eczema.

The mechanism of production of nummular eczema is unknown, but my working hypothesis is that the disorder results from retrograde nerve impulses with production of irritating chemicals in the skin. It is now recognized that the action of the involuntary nervous system is mediated by release of acetylcholine or sympathin at nerve endings.

I have had no experience with administration of vitamin A in the treatment of this common and troublesome dermatosis, but I have found that local application of crude coal tar (in the form of an ointment) has been followed by excellent therapeutic results when combined with general measures for relief of nervous exhaustion, which includes generalized ultraviolet irradiation, also used by Dr. Gross. If the results of Dr. Gross are verified, his new method will prove helpful in the management of nummular eczema.

DR. EVERETT C. FOX, Dallas, Texas: Dr. Gross has stated that it is improbable that a specific allergy or bacterial and fungous sensitization is the causative factor in this type of eczema. If he would change the word "improbable" to "probable," I should agree with his entire paper. With the "improbable" I cannot agree.

These cases are very common, and the condition is a constantly recurring one. The nummular lesions clear up and recur in a few weeks. In all of the cases in which satisfactory cultural studies have been made hemolytic streptococci have been found.

Dr. Arthur Schoch (*J. Chemotherapy* **15**:36, 1938) reported on 9 patients, of whom 2 were entirely cured with sulfanilamide alone, 5 were markedly improved and in 2 the treatment failed. In some cases in which there was a great deal of difficulty in effecting a cure, particularly before administering sulfanilamide or its derivatives, vaccines were used. Large numbers of stock and autogenous vaccines of streptococcic types were kept on hand. Intradermal tests were made, and to persons who showed marked sensitivity to one of the vaccines, intradermal therapy was given. The condition of 1 patient was cleared entirely with one of the stock vaccines. He remained free of the eruption for six or eight months. He was then given a large dose of the vaccine, 1 cc. subcutaneously, which produced in the same sites his old nummular eczema; this cleared up spontaneously in two or three weeks. The lesions could be reproduced with a vaccine which previously in very small doses had caused improvement.

I have not tried vitamin A in cases of this kind, but I shall in the immediate future. If this condition is due to a disturbance in keratinization or sebaceous function or vitamin A deficiency, I am unable to see the correlation of the results obtained with sulfanilamide in wet dressings, in ointments and by mouth. Recently, because there were still some recurrences, it was found that 60 to 80 grains (4 to 5 Gm.) of sulfanilamide a day for two, four or six days brought about marked improvement. In many of these cases after a short interval there would be a recurrence. Thus, results have been improved by three or four days of freedom from the drug and then the administration of 10 or 15 grains (0.6 to 1 Gm.) of sulfanilamide night and morning, which is continued for two to four weeks. It has been helpful in this group of cases.

Is it possible that this condition varies so markedly in various sections of the country etiologically and therapeutically?

DR. JOHN G. DOWNING, Boston: I congratulate Dr. Gross for his clear presentation of this misunderstood dermatologic entity. I am grateful to him for this new method of treatment, which I intend to use on my return to Boston.

This disease is described under various terms, such as nummular eczema, parasitic eczema or orbicular eczema. I believe it presents a fairly definite clinical picture, but it is frequently masked by overtreatment and exposure to external irritants. It is usually a disease of the adult and is found in variuos classes of patients. In the intellectual group, composed of such subjects as lawyers, a neurogenic factor plays a part. Another group comprises garage workers or gasoline station attendants who come in contact with volatile solvents. In another group the hands and arms of the subjects, such as vegetable salesmen in open air markets, are exposed to varying degrees of temperature. Among the women it is found in school teachers and young housewives.

The differentiation of this disease from industrial dermatitis is at times extremely difficult, for with the superimposed dermatitis due to irritants or sensitizers contacted at work, one may frequently get a positive reaction to a patch test. With the alleviation of the contact dermatitis, this disease—so-called nummular eczema—assumes its characteristic form and is then recognized. However, as the claim has been accepted, retraction of one's diagnosis is of no avail. Then it is difficult to explain to the insurer why the disease is so protracted and why repeated attacks occur without exposure.

I have used all kinds of treatment with varying success. At times coal tar would rapidly clear up an attack. Culturing frequently reveals a combination of Staphylococcus aureus and an anhemolytic streptococcus, and an autogenous vaccine made from this combination has helped in a few cases. Roentgen ray therapy occasionally produces an excellent result. However, I have found that when one tells a group of dermatologists what is the best method of therapy for nummular eczema, one is usually greeted with a quizzical smile.

Dr. Joseph Muller, Worcester, Mass.: Nummular eczema is a bugaboo to all dermatologists. The section in this paper on differential diagnosis is of great help. Last year there were many papers on soap dermatitis. The morphologic picture of soap eczema is often indistinguishable from what is described here as nummular eczema. One of the pictures Dr. Gross described could be easily one of contact eczema occurring in the dye house in a textile plant, where workers are exposed to heat and alkali. The therapeutic results obtained by Dr. Gross are wonderful. Of course, the series is rather small. If I could duplicate his results I should buy up all the carrots I could find.

Dr. Henry Niles, New York: I should like to thank Dr. Gross for his instructive paper. It is of much more practical value to hear a paper on a common condition, such as nummular eczema, than on some rare disease which one might never encounter.

I should like to mention a few thoughts which I have had on this subject. The location of the lesions and their occurrence in the winter could both be explained by the fact that the circulation of the extensor surfaces and of the dorsa of the hands is not as good as elsewhere, especially in winter because of constriction from cold, so that some circulatory disturbance may be the basis of nummular eczema. Clinically, the appearance of the sharply circumscribed round red edematous patches studded with vesicles certainly suggests herpes. I suggest the possibility that this condition may be due to a virus analogous to that causing herpes simplex or that it may be a localized form or variant of dermatitis herpetiformis. I agree with Dr. Becker that possibly the reason why this eruption is better in summer is not only because of the warmer temperature but also because many of the patients are young and still students and at that season they

are not going to school or worrying about examinations. A patient, a young girl whom I saw for several years, had this eruption only in the winter until one summer when she studied all summer in summer school, and for the first time in about eight years her nummular eczema did not disappear in the summer. The added mental strain caused her eruption to persist even in the warm weather.

I wonder if Dr. Gross would say something about the incidence. It seems to me—although it is just an impression—that I do not encounter as many cases of nummular eczema now as I did, say, six or seven years ago. It is rather fortunate, at least in private practice, that I do not, because before Dr. Gross told us of his results with vitamin A it was practically an incurable condition. When I first saw patients with nummular eczema I was delighted to have the opportunity to treat them, because they would respond almost immediately to crude coal tar, as has been mentioned, in a paste base or to two or three fractional doses of roentgen rays and would be very grateful for about three or four weeks until they had a recurrence. The condition would clear up again and then keep recurring. If there is now a means of obtaining a permanent cure, it is a great advance.

Dr. Paul Gross, New York: Although Dr. Becker's views seem to differ greatly from mine, we shall eventually find ourselves on common ground. Nummular eczema is an eczematous dermatosis which is subject to eczematogenous stimuli. The asteatosis seems to be the predisposing factor determining the threshold of the eczematous reaction. The recognition of this fact and the means of removing the predisposing cause should be considered progress in a condition in which the only positive knowledge so far has been to admit ignorance of the mechanism of its production. Even the difficulties of atopic eczema or an intricate contact dermatitis would not make one feel so helpless, since at least the fundamental mechanism of these conditions has been sufficiently established to give definite leads in their investigation. Not so in nummular eczema, the therapy of which has been purely empiric.

Clinical evidence of asteatosis is present in many cases of nummular eczema, and the extensor surfaces of the legs and thighs are good places to look for it, even though the eczema may be confined to the hands. Careful examination is sometimes necessary to recognize the vesicles, and the difference between the *état vésiculeux* and *état craquelé* is the differential point between nummular and asteatotic eczema.

The neurogenic mechanism which has led Dr. Becker to consider nummular eczema a neurodermatitis in the sense used by Kreibich is explained by an increased irritability of the epidermal nerve endings. I believe, however, that the alteration of the epidermal cells caused by a disturbance of vitamin A utilization accounts for the pathologic irritability. The exclusion of external stimuli by bandages with paste of zinc oxide N. F. and the beneficial effect of coal tar often give prompt therapeutic results but of temporary nature only, because they do not restore the normal function of the epidermis. Prompt reappearance of vesicular lesions after local therapy only, resembling a flare-up of a fixed eruption, is seen commonly. On the other hand, I have had a number of patients under observation during a second winter season who have been treated with vitamin A, and the results have been most satisfactory.

To answer Dr. Everett Fox, I have never considered nummular eczema to be due to local infection. I have no experience besides routine examinations in regard to focal infection. Spies has demonstrated in a high percentage of perlèche-like lesions of ariboflavinosis a predominance of hemolytic streptococci. I have also

reported a prompt response in extensive monilia infections of the skin to injections of liver extract. The interrelation of vitamins to infection is indeed an important subject.

Dr. Downing's remarks have been very gratifying. I shall endeavor to apply as thorough an anlaysis to nummular eczema as he has applied to occupational eczema. I know that Dr. Niles has been led by his experience to consider nervous strain an important factor of nummular eczema. I agree with him, but it must be realized that in medicine one is dealing with a multiplicity of causes and that a distinction must be made between the etiologic factors, contributing factors and precipitating factors.

AVOIDANCE OF FATAL COMPLICATIONS IN THERAPEUTIC MALARIA

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Since 1925 over 1,000 syphilitic patients have received therapeutic malaria at the University Hospital. Twenty-nine patients died as a result of this treatment—a mortality rate of 2.8 per cent. An analysis of the deaths discloses that peripheral circulatory collapse accounted for 12 (41 per cent); pneumonia, 5 (17 per cent); hyperpyrexia, 5 (17 per cent); suicide, 2 (7 per cent), and erysipelas, vascular accident (cerebral thrombosis), bleeding duodenal ulcer, ruptured spleen and respiratory failure, 1 (3 per cent) each.[1]

Before the induction of malaria, patients should be thoroughly examined with an evaluation of their physical ability to withstand this treatment. It is impossible to formulate definite criteria that will apply to every case. Generally speaking, one should be cautious in the selection of patients but should not lose sight of the serious nature of the disease to be treated, thereby omitting the treatment which is likely to have the greatest therapeutic efficacy. Many deaths may be prevented if patients are treated in separate hospital units under the supervision of trained physicians and nurses who are familiar with the necessary precautions to be taken and who are able to cope with the complications that may arise.

INDICATIONS AND CONTRAINDICATIONS

As was pointed out in a previous communication,[2] in addition to a general physical examination, careful neurologic and ophthalmologic examinations, determinations of nonprotein nitrogen in the blood, urinalyses and examinations of the spinal fluid are carried out on all candidates for malaria treatment at the University Hospital. Other

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1. Wile, U. J., and Mundt, L. K.: An Analysis of Deaths Following Therapeutic Malaria, Am. J. Syph., Gonor. & Ven. Dis., to be published.

2. Wile, U. J., and Hand, E.: Ten Years' Experience with Malaria in Neurosyphilis: A Critical Appraisal, Am. J. Syph., Gonor. & Ven Dis. **20**:630, 1936.

studies are made whenever indicated. We prefer not to treat patients over 55 years of age, but exceptions are made when the indications are sufficiently definite and when the physical status of the patient does not contraindicate such treatment.

Conditions which render patients unfit for malaria treatment [3] include: severe cachexia, diabetes, nephritis with renal insufficiency, hepatitis with insufficiency, active pulmonary tuberculosis, severe anemia, extreme old age and obesity. Johnson and Jefferson [3a] expressed the opinion that aortitis and other cardiac lesions offer no contraindication unless there are signs of heart failure present or unless there is a history of cardiac decompensation in a patient presenting clinical evidence of a damaged heart, such as dilatation. The teaching at this clinic [2] is that aneurysm, aortitis and aortic regurgitation constitute contraindications which can be overlooked providing the patient is badly in need of fever therapy. Malaria inoculation should be carried out, however, only in patients whose hearts are well compensated.

PRECAUTIONS AND COMPLICATIONS

It is unwise to subject a patient to malaria in the face of defects in the physical state which are correctable by proper premalarial care. All necessary measures to improve the health of the patient should be taken before inoculation.

Patients at this institution are put to bed with the onset of the first chill. Throughout the course of fever frequent determinations of blood pressure, temperature and pulse rate are made. During an actual paroxysm these are recorded at hourly intervals. Urinalyses and examinations of the blood, including determinations of hemoglobin, are made at least twice weekly and more frequently if indicated. The patients are given a soft diet of high caloric and high vitamin value with an abundance of fluid, particularly during attacks of fever. The chlorides are maintained at a safe level by the routine administration of sodium chloride.

Karnosh and Williams [4] listed as definite danger signals any one of the following signs: (1) a paroxysm with high temperature, 41 C. (104.8 F.) or over; (2) a chill with low temperature accompanying an unusually high pulse and respiratory rate; (3) a fever which remains for eight hours after a normal chill peak; (4) blood pressure under 100 systolic and 60 diastolic; (5) blood urea over 60 mg. per hundred

3. (*a*) Johnson, G. S., and Jefferson, R. A.: Medical Aspects of Malaria Therapy in Neurosyphilis, J. Nerv. & Ment. Dis. **73**:405, 1931. (*b*) DeAsis, C.: Malaria as a Therapeutic Agent for Paresis, Arch. Neurol. & Psychiat. **22**:752 (Oct.) 1929. (*c*) Wile and Hand.[2]

4. Karnosh, L. J., and Williams, G. H., Jr.: Some Unusual Complications in Malaria Therapy, Ohio State M. J. **31**:193, 1935.

cubic centimeters, and (6) cyanosis of any degree. Severe icterus with index above 50, a red blood cell count below 2,000,000, progressive rapid anemia associated with cessation of chills and profuse diarrhea accompanied by vomiting and dehydration constitute other serious dangers, pointed out by Driver, Gammel and Karnosh.[5] It is a fact that some malarial patients withstand a low blood pressure remarkably well. We agree with Krauss [6] that low blood pressure alone is a symptom of malaria to be expected and is often of no significance unless a picture of typical shock intervenes. Other signs indicative of danger were discussed by Rudolf.[7] These include: a sudden drop in the patient's strength; onset of a serious cardiac condition; development of a serious gastric condition; temperature, pulse rate and respiratory rate exceeding 106 F., 160 and 60 respectively; occurrence of seizures; bronchitis, pneumonitis or edema of the lungs, and any acute illness that develops during the course of fever. Herpes simplex, mild jaundice, vomiting, headaches, dizziness, confusion and accentuation of lightning pains are among the many mild complications.

Because of the risk in allowing the continuation of malaria after one of the aforementioned serious complications has developed, many patients have not been given a full course of fever therapy. Recently Cole and his associates [8] reported on the use of thio-bismol for the management of malarial patients. The drug is administered just prior to a chill. In six to twelve hours a temporary remission is produced, which lasts for one to two days, during which time the patient has a chance to recuperate. We have used thio-bismol on several occasions during the past few months with most satisfactory results. Patients who would have required termination of the fever therapy because of the development of complications completed the prescribed number of paroxysms safely and satisfactorily.

MANAGEMENT OF COMPLICATIONS

Many deaths will be prevented if patients are carefully observed and paroxysms either interrupted or controlled as serious complications arise. Blood transfusion, along with other routine shock measures, is the most

5. Driver, J. R.; Gammel, J. A., and Karnosh, L. J.: Malaria Treatment of Central Nervous System Syphilis—Preliminary Observations, J. A. M. A. **87**:1821 (Nov. 27) 1926.

6. Krauss, W.: Analysis of Reports of 8,354 Cases of Impf-Malaria, South. M. J. **25**:537, 1932.

7. Rudolf, G. de M.: Therapeutic Malaria, London, Oxford University Press, 1927.

8. Cole, H. N.; De Oreo, G. A.; Driver, J. R.; Johnson, H. H., and Schwartz, W. F.: Use of Bismuth Injections to Manage Course of Therapeutic Malaria, J. A. M. A. **115**:422 (Aug. 10) 1940.

efficacious treatment for peripheral circulatory collapse. This condition usually appears suddenly and calls for immediate treatment. Malaria is a hemolytic disease and as a result mild anemia and jaundice, of little or no significance, occur frequently. The severe anemia or jaundice that develops during malaria responds well to blood transfusion, as does persistent hypotension, which so commonly follows malarial paroxysms. Antipyretic drugs and ice bags will lower the temperature in most instances of hyperpyrexia. For any acute illness or intercurrent infection, treatment is directed toward the specific infection present. Rupture of the spleen, a more common complication than one would expect, will prove fatal unless laparotomy is performed.

SUMMARY

Therapeutic malaria is considered from the standpoint of the patient's physical ability to withstand such treatment. The various indications, contraindications, precautions and complications are briefly discussed, along with the management of serious complications.

ALOPECIA LIMINARIS FRONTALIS

COMMENT ON CAUSATION AND REPORT OF FOUR CASES

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Alopecia liminaris frontalis was first described by Sabouraud [1] as a clinical entity and was classified among the rare diseases of the scalp. He considered it an acneform eruption, characterized in its initial phase by squamous and crusting lesions, which finally evolved to permanent baldness with scarring. The disease usually begins in adolescence as two symmetric and subacutely inflamed itchy patches situated in the temporal regions just above the hair line. From here the condition extends anteriorly as two narrow margins which meet at the midline, thus forming a bandlike eruption around the forehead. Scales, crusts and minute pustules are the characteristic lesions in the early stage. They are followed by gradual death of the hair papillae, leaving a characteristic alopecia with hardly visible retracted scars. The disease spreads rapidly if not treated early. In all the cases but 1 reported so far the patients have been women and girls; Schmidt [2] reported 1 case in which the patient was a man.

As neither the etiologic agent nor the pathogenesis of alopecia liminaris frontalis has been conclusively established, I am reporting 4 cases (1 child and 3 adults) illustrating the initial and end stages of the disease.

REPORT OF CASES

CASE 1.—L. S., a Negress aged 48, entered the clinic for an opinion on the loss of her hair. She was vague as to its onset but thought it had begun more than thirty years previously, when she had complained of itching and gradual loss of the hair on the temporal regions. The baldness, which at first was slight, became more and more evident, extending a short distance behind the ears and forward to the forehead. For several years the condition remained unchanged. During her youth her mother had constantly kept her hair arranged in tightly drawn braids.

On examination the hair on the scalp was normal in thickness but extremely short (fig. 1 *A*). The area of alopecia was in the temporal regions above the hair

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From the Department of Dermatology and Syphilology, Harlem Hospital (service of Drs. S. Irgang and E. R. Alexander).

1. Sabouraud, R.: Alopécie liminaire frontale, in Darier, J., and others: Nouvelle pratique dermatologique, Paris, Masson & Cie, 1936, vol. 7, p. 135.

2. Schmidt, F.: Alopecia liminaris frontalis, Dermat. Wchnschr. **103**:1627 (Dec. 12) 1936.

line and was symmetric and more or less triangular in shape. There were bandlike anterior extensions which met at the midline of the forehead slightly behind the normal hair line. The baldness also extended slightly posteriorly toward the mastoid prominence. Throughout this area there was incomplete alopecia sprinkled with discrete tufts of hair. There were multiple, fine linear and punctate scars which were barely visible. The physical examination showed a fairly well nourished woman with no definite evidence of endocrine imbalance. The heart and lungs were normal. The Wassermann reaction of the blood was negative, and the urine was normal. A biopsy specimen was taken from the temporal region, and the histologic examination showed the following picture: The epidermis appeared normal. Throughout the cutis there was noticeable absence of hair follicles. The blood vessels and sweat glands showed no abnormal change. There was noticeable absence of sebaceous glands.

CASE 2.—E. D., a Negress aged 31, appeared at the clinic for treatment of a disease of the scalp which had begun more than fifteen years previously as a scaly

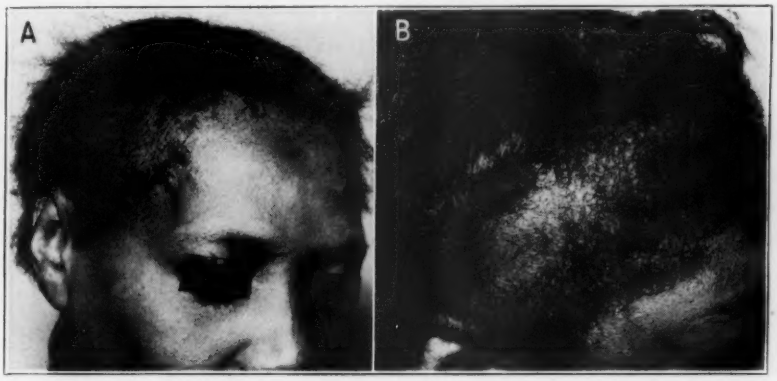

Fig. 1.—*A* (case 1), incomplete alopecia of the temporal region. Note the hairy tortuous border. *B* (case 2), incomplete alopecia with bandlike extension to the midline of the forehead.

itching eruption in the temporal regions. This was followed by progressive loss of hair, which at first was imperceptible. In her youth her mother had kept her hair braided tightly. Examination showed thick but extremely short hair (fig. 1 *B*). There was a bitemporal and symmetric incomplete alopecia with a bandlike extension to the forehead meeting at the midline within the hair line. The physical examination showed no abnormalities. The Wassermann reaction of the blood was negative, and the urine was normal.

CASE 3.—O. J., a Negress aged 47, was receiving treatments in the clinic when the disease of the scalp was observed. The loss of hair in the temporal regions was first noticed during adolescence. Nothing was done because it was attributed to persistent headaches to which she was subject. During childhood her mother had arranged her hair in tightly drawn braids. She remembered that on several occasions she had cried because of the pain caused by the braiding, especially on the temporal side of her scalp, which was so great that she was compelled to loosen the braids herself to obtain relief. Examination showed a well nourished woman

with short hair on her scalp. There was a symmetric incomplete alopecia of the temples which extended to the forehead (fig. 2 *A*). The hairs around the edges were sufficiently long and thick to form a perceptible border. The urine was normal. The Wassermann reaction of the blood was positive. The physical examination showed no other abnormalities.

CASE 4.—M. F., a Negro girl aged 6 years, was brought to the clinic by her mother for treatment of alopecia of the scalp. This continued for three months but showed no improvement in spite of local application of various remedies. Examination showed that the hair throughout the whole scalp was short and arranged in several tightly made braids (fig. 2 *B*). In the temporal regions the braids seemed especially tight, exerting violent traction on the roots of the hair. There was mild diffuse alopecia with crusting and multiple follicular pustules throughout the patch. In one region there was a bean-sized fluctuating kerion-like lesion. On the glabrous skin of the neck there were a few discrete impetiginized lesions. The disease was symmetric. Both the direct and the cultural examinations for fungi gave negative results.

Fig. 2.—*A* (case 3), incomplete alopecia of the temporal region. *B* (case 4), child with slight alopecia showing hair arranged in tight braids. Note the violent traction on the roots of the hair.

CAUSATION

Sabouraud considered this form of alopecia with its atrophic sequelae as an entity and classified it between the seborrheas and the acnes because it presented the oiliness of the former and the pitted scars of the latter. Louste and Rabut [3] stated the belief, on the other hand, that such a squamous and crusting lesion of the scalp which evolved to cicatricial sequelae gave the impression of a microbic process. However, after repeated cultural and direct examinations of the scales and crusts only staphylococci and streptococci were found, which offered insufficient evidence of a microbic cause. They then considered trauma to the hair follicles as a possible cause. They reported the cases of 2 sisters, 9

3. Louste and Rabut: Alopécie liminaire frontale, Bull. Soc. franç. de dermat. et syph. **40**:564 (April) 1933.

and 11 years old, who presented symmetric alopecia of the temporal region and partial alopecia with minute pustules and crusting. They called attention to the fact that in both cases curlers were used and that their application exerted traction on the roots of the hairs, thereby giving rise to traumatic folliculitis. Balina [4] also considered the process a traumatic folliculitis due to the traction of curlers. In several communications to the Dermatological Society of Buenos Aires, Argentina, he stressed the role of curlers in the causation of alopecia liminaris frontalis of Sabouraud. According to him, Sabouraud had observed the disease only in middle-aged and elderly women and saw the sequelae which had already been long established, whereas he was more fortunate in observing the same process in its initial phase. He concluded finally that violent traction of the roots of the hair by the use of curlers could result in such lesions of the scalp. As might be expected, vitamins and endocrine theories have come in for some consideration (Sutton and Sutton [5]).

Among Negro mothers it is the custom to arrange the short hair of young girls in small tightly made braids. This style of hair dressing usually exerts violent traction on the hair follicles and especially on those at the side of the scalp. Since the scalp in this area comes under the physiologic influence of the muscles of facial expression, it therefore undergoes more frequent contraction and relaxation than that of the vertex. The result is that this added physiologic factor tends to increase the traction on the already taut roots of the hairs. The presence of marginal hairs may be due to the fact that the hairs in this location, being shorter, are not caught up in the braids, and, even if they are, they are soon freed by the various movements of the scalp.

In the clinic of Harlem Hospital, where the majority of patients are Negroes, one may observe weekly at least 1 or 2 cases of this disease. For this reason the disease should not be considered rare.

SUMMARY AND CONCLUSIONS

Four cases of alopecia liminaris frontalis are reported.

One case, that of a child, showed the initial phase of the disease, and the other 3 cases, of women, showed the final stage with its sequelae.

The custom of arranging the hair in tightly drawn braids causes a traumatic folliculitis of the scalp and is a probable cause of alopecia liminaris frontalis.

2135 Seventh Avenue.

4. Balina, P.: Alopécie liminaire de Sabouraud, Bull. Soc. franç. de dermat. et syph. **40**:1277 (July) 1933.

5. Sutton, R. L., and Sutton, R. L., Jr.: Diseases of the Skin, ed. 10, St. Louis, C. V. Mosby Company, 1939, p. 1399.

POIKILODERMATOMYOSITIS

REPORT OF A CASE WITH COMPLETE POSTMORTEM EXAMINATION

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It is the purpose of this paper to present a case of poikilodermatomyositis with a complete postmortem examination, as such reports are relatively rare, especially in the American literature.

In 1906 G. Petges and Cléjat [1] described a disease which they termed "atrophic sclerosis of the skin and generalized myositis." In 1929, after observing additional cases and noting similarities to the cutaneous lesions described by Jacobi [2] and designated "poikilodermia atrophicans vascularis," G. Petges [3] gave the condition the name "poikilodermatomyositis." The subject of the poikilodermas in general and of poikilodermatomyositis in particular has been thoroughly reviewed by G. Petges and A. Petges.[4] They distinguished three forms of poikiloderma: (1) a purely cutaneous form; (2) poikilodermatomyositis, a form associated with generalized myositis, and (3) poikilodermatomyositis accompanied by subcutaneous calcareous concretions. In their article Petges and Petges recorded 29 reported instances of poikilodermatomyositis. In 4 of these the condition was associated with calcinosis, and these cases were personally observed by the authors. The case reported here is similar to those in the last-mentioned group.

In 1933 Fuhs [5] reported 2 cases of poikilodermatomyositis which were not included in the Petges article. In 1936 and 1937 Dowling,[6]

From the Department of Pathology, Columbia University, College of Physicians and Surgeons.

1. Petges, G., and Cléjat, C.: Sclérose atrophique de la peau et myosite généralisée, Ann. de dermat. et syph. **7**:550-568, 1906.

2. Jacobi, E.: Poikilodermia atrophicans vascularis, in Neisser, A., and Jacobi, E.: Ikonographia dermatologica, Berlin, Urban & Schwarzenberg, 1908, vol. 3, pp. 95-100.

3. Petges, G.; Mougneau; Lecoulant, and Delas: Poikilodermie et polymyosite (poikilodermatomyosite), Bull. Soc. franc. de dermat. et syph. **36**:817-823, 1929.

4. Petges, G., and Petges, A.: Poikilodermie, in Darier, J., and others: Nouvelle pratique dermatologique, Paris, Masson & Cie, 1936, vol. 6, pp. 114-152.

5. Fuhs, H.: Ueber poikilodermatomyosite und ihre Stellung im System der Hautkrankheiten, Arch. f. Dermat. u. Syph. **168**:505-518, 1933.

6. Dowling, G. B.: Poikilodermatomyositis (Petges), Brit. J. Dermat. **48**: 380-383, 1936.

Gray,[7] Bamber[8] and Semon[9] presented cases before the Section of Dermatology of the Royal Society of Medicine. In 1938 Dowling and Freudenthal[10] published a paper emphasizing the differences between the poikiloderma of Jacobi and dermatomyositis. These authors did not regard the disease of Petges and Cléjat as distinct from dermatomyositis in general.

Additional case reports have been published by Drouet,[11] Bureau,[12] Ballarini[13] and Guy, Grauer and Jacob.[14] In 1939 a case was reported by Drouet, Florentin, Verain and Girard[15] in which poikilodermatomyositis was associated with multiple epitheliomas, generalized osteoporosis and spontaneous fractures of the right radius, the right ulna and the left femur. Talbott, Gall, Consolazio and Coombs[16] described an interesting case under the name "dermatomyositis with scleroderma and calcinosis," in which the clinical diagnosis was for a time confused with Addison's disease. In 1940 O'Leary and Waisman[17] reported 40 cases of dermatomyositis, noting that in 1 case, that of a 6 year old boy, the condition resembled the poikilodermatomyositis of Petges.

REPORT OF CASE

Clinical History.—S. H., a 27 year old Negro, was first admitted to Presbyterian Hospital Oct. 25, 1938, complaining of progressive scaling of the skin over most of the body. The first areas of change noted five years previously had followed the formation and subsequent rupture of vesicles on both forearms. Generalized

7. Gray, A. M. H.: Poikilodermatomyositis, Brit. J. Dermat. **48**:630-632, 1936.

8. Bamber, G.: Poikilodermatomyositis, Brit. J. Dermat. **48**:648-650, 1936.

9. Semon, H.: Poikilodermatomyositis, Brit. J. Dermat. **49**:120-122, 1937.

10. Dowling, G. B., and Freudenthal, N.: Dermatomyositis and Poikilodermia Atrophicans Vascularis: Clinical and Histological Comparison, Brit. J. Dermat. **50**:519-539, 1938.

11. Drouet, P. L.: Un cas de poikilodermatomyosite ou maladie de Petges, Bull. Soc. franç. de dermat. et syph. (Réunion dermat., Nancy) **41**:793-796, 1934.

12. Bureau, Y.: Un cas de poikilodermatomyosite (maladie de Petges et Cléjat), Bull. Soc. franç. de dermat. et syph. **45**:858-862, 1938.

13. Ballarini, M.: Su di un caso di poikilodermia a tipo de Poikilodermatomiosite; Case, Arch. ital. di dermat., sif. **52**:52-60, 1939.

14. Guy, W. H.; Grauer, R. C., and Jacob, F. M.: Poikilodermatomyositis, Arch. Dermat. & Syph. **40**:867-878 (Dec.) 1939.

15. Drouet, P. L.; Florentin, P.; Verain, M., and Girard, J.: Une forme clinique nouvelle de la maladie de Petges-Jacobi (poikilodermatomyosite, ostéoporose des extrémités avec fractures spontanées, évolution épithéliomateuse des ulcérations), Presse méd. **47**:975-977, 1939.

16. Talbott, J. H.; Gall, E. A.; Consolazio, W. V., and Coombs, F. S.: Dermatomyositis with Scleroderma, Calcinosis and Renal Endarteritis Associated with Focal Cortical Necrosis, Arch. Int. Med. **63**:478-496 (March) 1939.

17. O'Leary, P. A., and Waisman, M.: Dermatomyositis: Study of Forty Cases, Arch. Dermat. & Syph. **41**:1001-1019 (June) 1940.

muscular weakness and wasting developed, which progressed gradually. Motion of many joints, particularly those of the upper extremities, became increasingly restricted. From time to time the skin over the joints of the fingers ulcerated and hard granules were extruded. Pruritus was a complaint early in the course of the disease but later disappeared. Shortly before admission the teeth became loose. The past history was otherwise completely normal. During the period of his present illness, because of a positive Wassermann reaction, the patient was given vigorous antisyphilitic therapy.

Physical Examination.—The patient was chronically ill and presented severe wasting of the muscles, especially those of the upper extremities. The skin over almost the entire body, especially of the legs, arms and lower part of the abdomen, was dry, inelastic and covered with fine, silvery scales. On the ears and neck, the extensor surfaces of the arms, legs and hands and the lateral surfaces of the trunk the skin appeared atrophic. The cutaneous surface showed scattered islands, 3 to 4 mm. in diameter, of thinning and pallor, lying in reticular areas where the skin was hyperpigmented and scaly, with a suggestion of redness. Some of the white macules contained black pigmented spots. A few telangiectases were present on the shins. Scarring and depigmentation were present on the face, the neck and some of the phalangeal joints of the hands. Scarring and atrophy were severe in the axillas and cubital fossae; hard nodules were palpable just beneath the skin in these regions. The ranges of motion of all the joints of the upper extremities were greatly restricted. These limitations appeared to be the result of muscle contracture. Minute calcified granules had perforated the skin over the dorsa of the phalangeal joints of the hands. The temperature was 97.4 F.; the blood pressure was 120 systolic and 100 diastolic. A few rales were noted at the base of the left lung, but the remainder of the physical examination gave essentially negative results.

Laboratory Data.—The blood count and the urine were normal. The reaction to a Kline test was negative. The serum protein content was 8.5 Gm. per hundred cubic centimeters, the albumin amounting to 3.7 Gm. and the globulin to 4.8 Gm., of which 1.5 Gm. was euglobulin. The serum uric acid was 6.8 mg. per hundred cubic centimeters and the blood calcium 9.2 mg. Other chemical constituents of the blood, including serum phosphatase and inorganic phosphorus, were normal. Roentgenograms disclosed strikingly symmetric calcification in the subcutaneous tissues of the hands, cubital fossae, axillary folds, feet, knees, thighs, buttocks and thorax.

Course of Illness.—Histologic examination of the skin was reported to show atrophy with fragmentation and fibrillation of the collagen bundles of the cutis and subcutis. A specimen of skin was found to contain 11.6 per cent of calcium per gram of dried tissue; the specimen, however, included one of the calcified subcutaneous nodules. The patient suffered a brief febrile episode following the extraction of a tooth. He experienced slight subjective improvement from prostigmine and general supportive measures and was discharged after two months.

On April 14, 1939 the patient was readmitted with acute appendicitis. An appendectomy was performed. The postoperative course was complicated by pneumonia of the lower lobe of the left lung. Pneumococci of types XI and III were recovered from the sputum. He recovered promptly after the administration of sulfapyridine (2-[paraaminobenzenesulfonamido]-pyridine). At operation a specimen of the rectus abdominis was removed for study. The histologic picture was similar to that seen at autopsy.

He was admitted for the third time Sept. 6, 1939, complaining of pain in the upper part of the abdomen and diarrhea. During the interval there had been progressive loss of muscle power. The temperature rose intermittently to as high as 103 F., and there was moderate anemia. The patient died on September 19, after repeated massive hemorrhages from the gastrointestinal tract. Terminally the serum nonprotein nitrogen rose to 104 mg. per hundred cubic centimeters, the serum inorganic phosphorus to 9.4 mg. per hundred cubic centimeters and the white blood cell count to 23,000, 91 per cent of which were polymorphonuclear leukocytes. All other blood chemical values remained as on previous determinations.

Autopsy.—The autopsy was performed ten hours post mortem.

Gross Findings: The body was that of an emaciated young Negro. The skin was essentially as described on admission to the hospital. Wasting of the musculature of the arms, forearms and legs was striking. The thighs appeared relatively well developed. The thoracic and abdominal muscles were extremely thin, wasted and pale. The serous cavities were normal.

The heart was slightly enlarged in relation to the size of the body, weighing 320 Gm. The right auricle and ventricle were dilated and hypertrophied. A few minute calcified nodules were present in the septal cusp of the tricuspid valve.

The left and right lungs weighed 440 and 1,020 Gm. respectively. The right lung exhibited more extensive changes than did the left. These changes consisted of numerous greenish brown areas of lobular consolidation, together with scattered areas of dense fibrosis, most of which involved the overlying pleura as well as the parenchyma. Minute yellow nodules, some of them calcified, were scattered through these fibrotic lesions. The surrounding air spaces were widely dilated, measuring up to 4 mm. in diameter. Large bullae were present along the anterior borders and at the apexes. The medium-sized bronchi showed a moderate degree of fusiform dilatation in their terminal portions. The main trunk of the pulmonary artery and all of its branches showed moderate sclerotic changes.

The testes were firm and pale, and the tubules could not be strung out.

The entire gastrointestinal tract was filled with large amounts of old, clotted blood. The duodenum was greatly distended; the mucous membrane of its first and second portions was extremely congested and its continuity interrupted by many irregular, punched-out, shallow ulcers. The diameters of these ulcers varied from 2 mm. to 2 cm. The ulcers appeared fresh, the surrounding inflammatory reaction being limited. Their bases were smooth, apparently formed by the muscularis. No eroded vessels were found. The esophagus showed several small similar ulcers.

The remaining organs presented no gross deviations from normal. The four parathyroids together weighed 130 mg.

Microscopic Examination: Sections were taken of the skin from the anterior abdominal wall, the left axilla and the anterior surface of the right thigh. They were stained with hematoxylin and eosin, Weigert's elastic tissue–Van Gieson's stain, Masson's trichrome stain and the phosphotungstic acid–hematoxylin stain. The epidermis was thinned, consisting over the dermal papillae of only two to four layers of cells. There was no excess of keratinization. In the areas of greatest atrophy only the cornified and basal cell layers could be made out. Occasionally the basal cells were small and vacuolated, with their borders indistinct. There were areas of depigmentation of the epithelium, beneath which groups of dermal chromatophores were especially conspicuous. The basement membrane was not everywhere distinct. A number of clear, sharply outlined spaces separated the epidermis from the cutis. The rete pegs were reduced in number and often some-

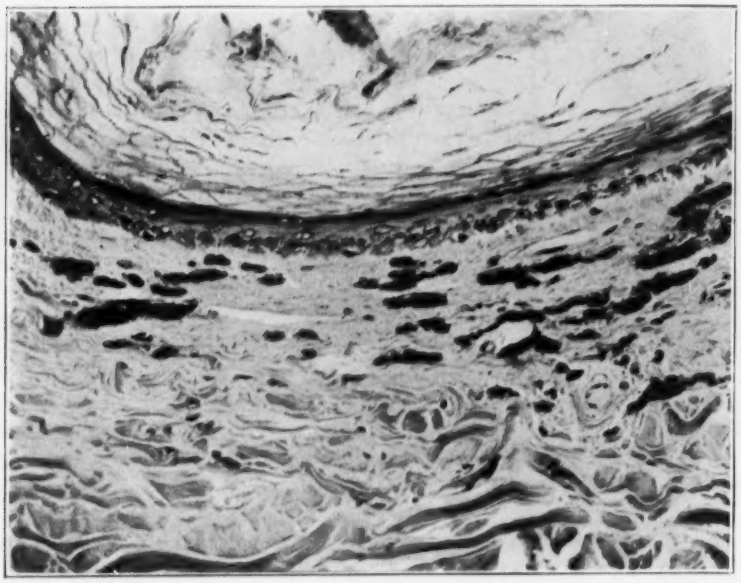

Fig. 1.—Skin of the thigh, showing thinning and depigmentation of the epidermis, absence of rete pegs and conspicuous dermal chromatophores (hematoxylin and eosin; × 230).

Fig. 2.—Skin of the left axilla, showing fragmented collagen fibers and infiltration of lymphocytes and large mononuclear phagocytes (hematoxylin and eosin; × 230). Note the sclerotic arteriole.

what shortened. The dermal papillae were correspondingly flattened and only infrequently penetrated by blood vessels. The collagen fibers of the papillary layer of the cutis were occasionally fragmented or hyalinized. Elastic tissue was decreased throughout the cutis. The fine fibers of the networks of the papillary layer were often fragmented. Fragmentation of the elastic fibers in the reticular layer was much more evident, however, especially in the regions where calcium salts had been deposited. Scattered degenerating collagen and elastic fibers were the centers of collections of inflammatory cells, largely mononuclear. Calcified deposits, when present, were situated in the deeper part of the corium and in the subcutaneous tissues and were surrounded by dense collagenous tissue, lymphocytes, plasma cells and large mononuclear phagocytes. The latter occasionally contained fine, lipoid droplets. Some of the superficial capillaries and veins of the corium were dilated. There was thickening of the walls of a few arterioles and of the small arteries; thickening of the former was due to hyalinization and of the latter to proliferation of the subendothelial fibrous tissue. The vascular lesions were neither striking nor numerous. The accessory structures of the skin appeared reduced in number but showed no abnormality other than the presence of Demodex folliculorum in a few hair follicles. The subcutis showed changes similar to those in the cutis. Nowhere was there any evidence of sclerosis or thickening of the skin.

Sections from the rectus abdominis, rectus femoris, biceps brachialis, diaphragm, pectoralis major and intercostal muscles were stained with hematoxylin and eosin, Weigert's elastic tissue–Van Gieson's stain, Masson's trichrome stain and the phosphotungstic acid–hematoxylin stain. The most striking change seen in all was advanced atrophy. It was most evident in the rectus femoris muscle. In sections of other muscles the atrophy was often associated with a chronic inflammatory reaction, predominantly lymphocytic. A section of the rectus abdominis muscle taken six months before death, at the time of the appendectomy, showed moderate numbers of polymorphonuclear leukocytes collected about the vessels. The atrophied fibers were shrunken and sometimes frayed and separated into their component myofibrils. Nuclear condensation was striking. There was slight, irregular, fibrous thickening of the epimysium, perimysium and endomysium of all the muscles examined, much of it appearing to be the result of condensation of the stroma following muscle loss. Fibrosis was frequently most marked about the blood vessels, a few of which showed sclerotic changes similar to those of the skin. In the remaining muscle fibers the striations often could not be made out and many fibers contained globular, eosinophilic bodies within large vacuoles. Many of these vacuolated fibers were greatly swollen. There were no alterations of the sarcolemma sheaths and no evidences of muscle proliferation. In so far as could be determined in these preparations, the nerves and nerve endings were normal.

Similar changes were seen in the striated muscle of the pharynx and proximal portion of the esophagus. In addition, the subepithelial tissues of the pharynx were the site of calcification and chronic inflammation, resembling the involved skin.

The fibrotic lesions in the lungs were nodular and overlaid with thickened pleura. Within the nodules were many multinucleated foreign body giant cells, some containing needle-shaped clefts, and vacuolated phagocytes (in which lipoid could be stained with scarlet red). Calcified plaques and granules were extensive in these nodules. Mononuclear cellular infiltration was dense. The fibrosis involved adjacent alveolar septums, and the alveoli were widely dilated and filled with polymorphonuclear leukocytes. The bronchi were similarly dilated and their walls

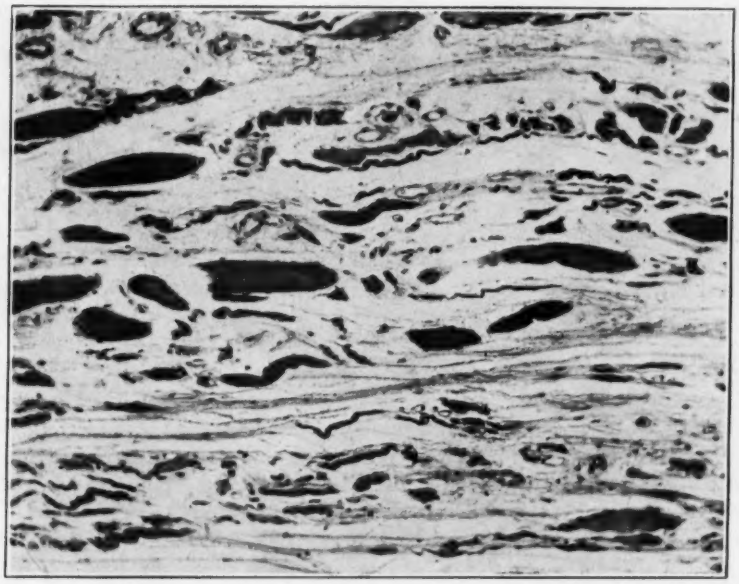

Fig. 3.—Rectus femoris, showing marked atrophy (hematoxylin and eosin; × 110).

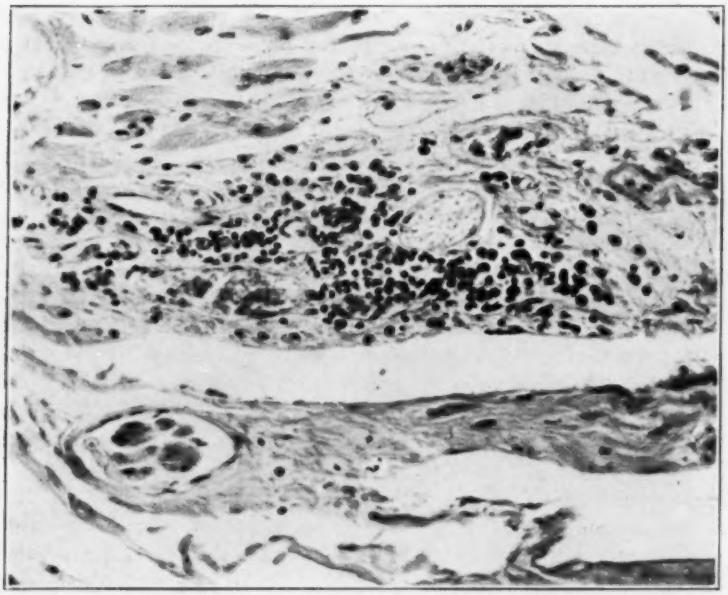

Fig. 4.—Rectus abdominis, showing atrophy and lymphocytic infiltration (hematoxylin and eosin; × 230). Note the normal muscle spindle at the lower left.

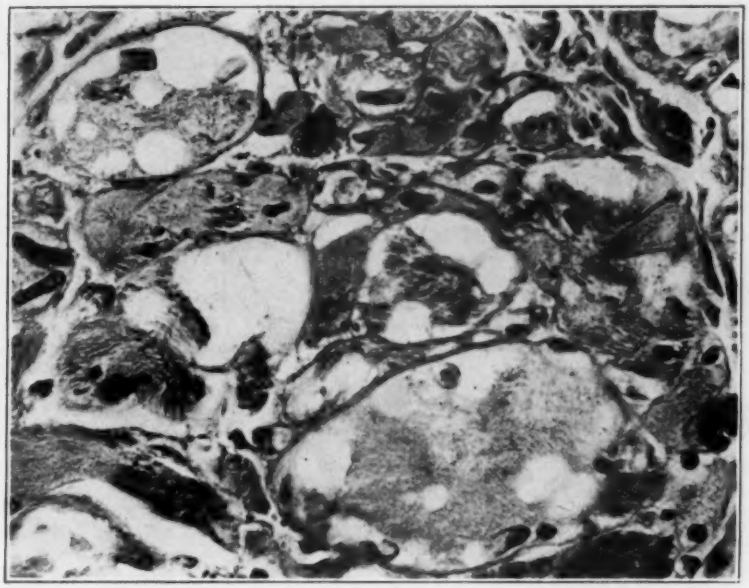

Fig. 5.—Intercostal muscle, showing swelling and vacuolation of the muscle fibers (hematoxylin and eosin; × 460).

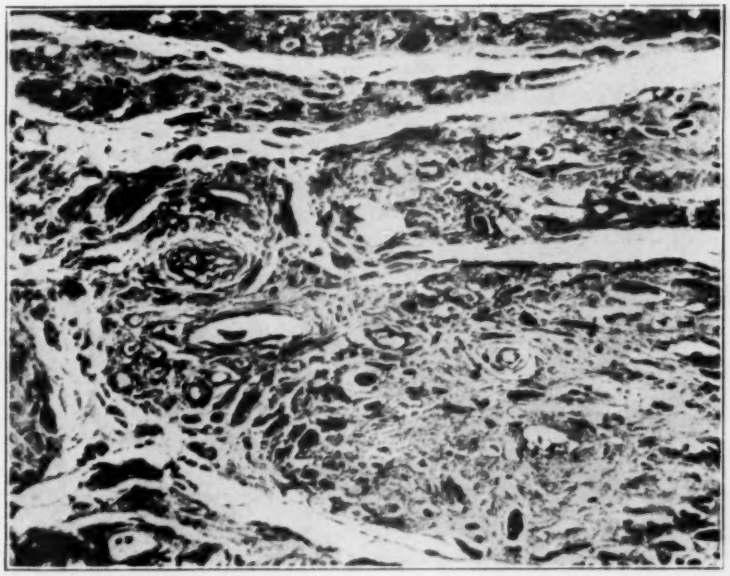

Fig. 6.—Pectoralis major, showing atrophy and marked fibrosis (Masson's trichrome stain; × 230).

inflamed. The small arteries were moderately sclerotic. Other sections showed an acute lobular pneumonia, brownish green shreds of foreign material being encountered in the alveolar and bronchial exudate.

The only change seen in the kidneys was extensive deposition of calcium salts in the loops of Henle. The calcium occurred as small spherical concretions, often with a central condensation. Some of these concretions were intracellular, or within the tubular lumens, but the majority appeared to lie between the epithelial cells and their basement membranes. This relation was well demonstrated with the combined von Kossa and azocarmine stains. Where the calcium deposits were not so large as to fill the tubules, the epithelium could be seen to be raised and stretched over them.

The testes showed advanced atrophy, without any evidence of spermatogenesis. There was an increase of the interstitial fibrous tissue.

Sections of the esophagus and duodenum revealed broad ulcers which were the site of extensive necrosis, hemorrhage and acute inflammatory reaction. One of the duodenal ulcers extended almost completely through the muscularis, the inflammatory reaction involving the adjacent retroperitoneal areolar tissue. Several small blood vessels, both arteries and veins, were involved in the necrotizing inflammatory process. Bacterial stains revealed many varied micro-organisms in the lesions in both the esophagus and the duodenum, including in the former long filamentous organisms, resembling the mycelial form of monilia. None of the ulcers showed changes suggesting efforts at repair.

Scattered throughout the gastrointestinal tract, most conspicuous in the submucosa of the colon, and occasionally in other tissues, such as the myocardium, were a few thick-walled hyalinized arterioles. Calcified granules were deposited in the media of the aorta.

In the anterior lobe of the pituitary gland was a minute cyst lined by a single layer of flattened epithelium. The surrounding parenchyma was entirely normal. The parathyroids appeared normal. "Water-clear" cells were rare, and only a few small groups of oxyphil cells were seen. The thyroid and adrenal glands were entirely normal. Sections of other organs revealed no additional lesions.

The chief anatomic diagnoses were: poikilodermatomyositis with calcinosis; calcification in the renal tubules; acute ulcers of the esophagus and duodenum with hemorrhage into the gastrointestinal tract; infected bronchiectases, fibrosis and emphysema of the lungs; lobular pneumonia; sclerosis of the pulmonary arteries; right-sided cardiac hypertrophy, and atrophy of the testes.

COMMENT

The condition in this case presents many similarities to dermatomyositis and scleroderma. Indeed, the English writers, especially Dowling and Griffiths [18] and Lewis,[19] tended to classify them in one group. Hazel and Hull [20] considered the term "poikilodermatomyositis" to describe a

18. Dowling, G. B., and Griffiths, W. J.: Dermatomyositis and Progressive Scleroderma, Lancet **1**:1424-1428, 1939.

19. Lewis, T.: Notes on Scleroderma (Dermatomyositis), Brit. J. Dermat. **52**: 233-242, 1940.

20. Hazel, O. G., and Hull, W. M.: Dermatomyositis in Children: Report of Two Cases with Fatal Termination, South. M. J. **33**:809-818, 1940.

chronic phase of dermatomyositis. It seems of value, however, to separate these conditions so far as possible, in the light of the present lack of any specific knowledge concerning their causation.

To be sure, the anatomic lesions are such that differentiation cannot be based on them alone. The changes in the skin and in the muscles are degenerative, although, in the muscle, at least, they are apparently accompanied by inflammatory changes in the early stages. The insidious onset, the slowly progressive course of the disease and the characteristic, variegated lesion of the skin with reticulated pigmentation are the chief features distinguishing poikilodermatomyositis from dermatomyositis.[4] Six cases of dermatomyositis with postmortem observations from this laboratory have been reviewed by me. Two of these were reported by Wolf and Wilens in 1936.[21] The course of the disease in the 6 cases ranged in duration from three weeks to eighteen months, averaging slightly less than seven months. In 2 cases the disease had an acute onset; in only two could the onset be described as insidious. Fever and leukocytosis were features of all the cases (in 1 instance no white blood cell count was made). A definite history of edema was obtained in 3 instances. In all 6 the muscular lesions were a more prominent part of the disease than the cutaneous manifestations. The lesions of the skin, though variable, were always erythematous. The myocardium was involved in 2 instances. In only 1 case was there advanced muscular atrophy. These points accord well with the descriptions of dermatomyositis as given in the review by Steiner in 1905 [22] and more recently by Kinney and Maher.[23] In the case under discussion, which I regard as an instance of poikilodermatomyositis, the condition differs from dermatomyositis in the following particulars: The illness was of insidious onset and ran a gradually progressive course over a period of six years. The cutaneous lesion was characteristic of poikiloderma and was a prominent part of the clinical picture. Fever and leukocytosis were absent except for two brief episodes, one following a tooth extraction and the other immediately before death. Pain was not a symptom, and edema was not present. Nor was any history of edema obtainable.

The differential points between dermatomyositis and scleroderma were tabulated by Brock.[24] He stated that the differentiation is usually

21. Wolf, A., and Wilens, S. L.: Dermatomyositis: Report of Two Cases with Complete Autopsy, Am. J. Path. **12**:235-247, 1936.

22. Steiner, W. R.: Dermatomyositis, with Report of a Case Which Presented a Rare Muscle Anomaly but Once Described in Man, J. Exper. Med. **6**:407-442, 1905.

23. Kinney, T. D., and Maher, M. M.: Dermatomyositis: Study of Five Cases, Am. J. Path. **16**:561-594, 1940.

24. Brock, W. G.: Dermatomyositis and Diffuse Scleroderma: Differential Diagnosis and Reports of Cases, Arch. Dermat. & Syph. **30**:227-240 (Aug.) 1934.

difficult only early in the course of scleroderma with an acute onset. According to Wise,[25] the outstanding feature of scleroderma is the increase of collagen and elastic tissue in the corium and subcutaneous tissues. These findings were absent in the case I reported. Muscular lesions are not the rule in scleroderma, though they were reported as early as 1907 by Nixon.[26] Undoubtedly borderline cases occur. Indeed, Jaffé [27] used the term "scleropoikilodermie" in a report of 2 cases of this condition.

Calcinosis was reported in a case of dermatomyositis by Rudolph [28] and is rather common in scleroderma. In 1911 Thibierge and Weissenbach [29] described a series of cases of scleroderma with subcutaneous calcinosis, a syndrome that has since come to be associated with their names. This subject was reviewed by Durham.[30] In my case the calcification, in the lungs as well as in the skin and subcutaneous tissues, appeared to be secondary to degenerative changes in the collagen. The relation of the calcific deposits in the kidneys is not clear. There was no elevation of the blood calcium, as has been reported in a number of other cases.[4]

The autopsy gave no clue to the possible cause of the condition. Vascular lesions were prominent only in the pulmonary arteries; elsewhere they were not sufficiently widespread or advanced to tempt one to place this case in the category of generalized vascular disease. The endocrine glands in general, and the parathyroids in particular, have been suggested as having a possible etiologic relation.[31] Freudenthal [32] called attention to similar muscular lesions in thyrotoxicosis. The disease has on occasion been confused with Addison's disease.[33] The parathyroids in this case were not enlarged, and microscopic examination showed no deviations from normal. There was advanced testicular atrophy with complete absence of spermatogenesis, but the significance

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25. Wise, F.: Scleroderma, in Nelson New Loose-Leaf Medicine, New York, Thomas Nelson & Sons, 1937, vol. 3, pp. 333-344C.

26. Nixon, J. A.: Sclerodermia and Myositis, Lancet **1**:79-81, 1907.

27. Jaffé, K.: Zwei Fälle von Sclero-Poikilodermie, Arch. f. Dermat. u. Syph. **159**:257-268, 1930.

28. Rudolph, C. C.: Calcinosis Universalis and Dermatomyositis, J. Pediat. **4**: 342-351, 1934.

29. Thibierge, G., and Weissenbach, A. J.: Concrétions calcaires sous-cutanées et sclérodermie, Ann. de dermat. et syph. **2**:129-155, 1911.

30. Durham, R. H.: Scleroderma and Calcinosis, Arch. Int. Med. **42**:467-490 (Oct.) 1928.

31. Petges and Petges.[4] Bureau.[12] Drouet, Florentin, Verain and Girard.[15]

32. Freudenthal, W.: Generalized Scleroderma and Dermatomyositis: Histological Comparison, Brit. J. Dermat. **52**:289-295, 1940.

33. Bureau.[12] Talbott, Gall, Consolazio and Combs.[16]

of this is difficult to evaluate, especially in view of the chronic pulmonary infection. The remaining endocrine organs showed no obvious abnormalties, nor were there clinical symptoms suggestive of adrenal insufficiency or of hyperthyroidism.

The duodenal ulcers were apparently terminal; none showed evidence of chronicity.

SUMMARY

A case of poikilodermatomyositis with calcinosis is presented with a complete autopsy report. The patient was a 27 year old Negro whose illness had lasted for six years. He had advanced and widespread muscular atrophy with a generalized eruption characterized by atrophy, pigmentation and subcutaneous deposition of calcium. The differentiation from dermatomyositis in general and from scleroderma is discussed. The autopsy offers no clue to the possible cause of the disease.

Dr. J. Gardner Hopkins supplied suggestions and criticism, and Dr. Walter W. Palmer gave permission to transcribe the clinical record.

MESQUITE WOOD DERMATITIS

EVERETT C. FOX, M.D.
DALLAS, TEXAS

There has been only one report [1] in the American literature of dermatitis resulting from mesquite wood. According to that report: "The mesquite tree (Prosopis juliflora) belongs to the family Leguminosae, or pod-bearing trees. There are seventeen genera and over thirty species of pod bearers native to North America, the best known of which are the various species of locust trees. The mesquite is found in arid and semiarid regions, ranging from Texas to southern California and north to Colorado and Utah.

REPORT OF A CASE

R. S. W., a white man aged 28, a farmer, gave a history of having a generalized dermatitis which occurred only during the winter months, appearing with cool weather in the fall of 1929, 1930 and 1931 and improving rapidly in the spring. He remained free of the dermatitis for eight years, but a recurrence developed in 1939.

The present attack began in the fall of 1940, and when he was first examined, on Feb. 17, 1941, there was a generalized, acutely inflamed, eczematoid dermatitis over the entire body, being more evident on the hands, forearms, ankles and legs and in the axillas, groin and cubital and popliteal spaces, with some involvement of the face and neck. Several areas were denuded, exudative and crusted while others showed more chronic changes with thickening and lichenification. The entire process was typically that of a contact dermatitis and suggestive of the type so frequently seen in farmers during spring and summer from plants (weeds). However, this patient's attacks were limited to cool weather after plants had been killed by frost. His duties included feeding cattle, and he handled wheat, oats, milo maize, hegari, peanuts, black-eyed peas, sorghum and corn daily. Patch tests with all of these materials gave negative reactions.

From the history elicited I found that all cooking was done with an oil stove and that for heating mesquite wood was used and had been used each of the recent years when the dermatitis had been present and that oak wood had been used in 1937 and 1938. Once each week to ten days enough wood was sawed to last for that interval, and sudden flare-ups of the dermatitis had been noticed at irregular intervals. The mesquite wood was usually dusty from being extensively worm eaten. Wood was carried into the house each day for fire. With the development of this history a conclusive story was elicited of a recent flare-up which necessitated the patient's remaining in bed for several days imme-

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From the Department of Dermatology, Baylor University College of Medicine.

1. Stewart, C. D.: Mesquite Wood Dermatitis, Arch. Dermat. & Syph. **42:** 937 (Nov.) 1940.

diately following a day spent in sawing wood. The patient was told to moisten some of the sawdust, and instructions were given for making patch tests; he was told to return to the office in a few days with a supply of the sawdust. Three days later a letter reported redness and itching at the site of the test. Moistened sawdust was applied again on his next visit, and a portion of the sawdust was

Generalized dermatitis from sawdust of mesquite wood.

extracted with ether and the brownish, oily, ether-diluted extract applied. Both substances elicited positive reactions, and the ether extract produced vesiculation.

The patient immediately installed an oil stove for heating and avoided the sawdust and worm dust about the wood yard. There was immediate improvement, and ten days later all of the lesions were dry and less red with little itching. A report six weeks later stated that the dermatitis had disappeared entirely.

SUMMARY

This condition, so characteristic of those seen in the summer months from vegetation but occurring during a season when plant dermatitis rarely occurs, developed from handling mesquite wood and contaminating the skin and clothing daily with the sawdust and worm dust. A careful history suggested the possible cause, and patch tests with this material elicited positive reactions. Immediate improvement occurred when contact was avoided.

1127 Medical Arts Building.

EFFECT OF SULFANILAMIDE AND ITS DERIVATIVES ON FUNGI

PRELIMINARY IN VITRO EXPERIMENTS

GEORGE M. LEWIS, M.D.
AND
MARY E HOPPER, M.S.
NEW YORK

There are few drugs or chemicals which qualify as practical fungicides. Therefore, in the treatment of many fungous diseases chief reliance is placed on the natural resistance of the body, the use of keratolytics, irritants or soothing agents and occasionally the administration of roentgen rays, the scheme of treatment depending considerably on the species of invading fungus.

Because of this lack of available specific treatment and because sulfanilamide and its derivatives have proved capable of selective cure of a diverse number of conditions, it was thought important to ascertain their effect on fungi.

MATERIAL

The following compounds were available for testing: sulfanilamide, sodium sulfapyridine (sodium 2-[paraaminobenzenesulfonamido]-pyridine), sulfathiazole (2-[paraaminobenzenesulfonamido]-thiazole), sodium sulfathiazole, sulfadiazine (2-[paraaminobenzenesulfonamido]-pyrimidine) and sodium sulfadiazine.

Strains of Trichophyton gypseum and of Monilia albicans were used.

METHOD

Measured quantities of ordinary isolation agar were melted, and the drugs in various concentrations were added. The insolubility of most of the compounds prevented higher concentration than 10 per cent. Crystallization occurred in all instances in a 5 per cent dilution, and with sulfathiazole and sulfadiazine crystallization occurred in a 1 per cent dilution. The various specimens were heated in a water bath at a temperature of 100 C. for thirty minutes and while still liquid were inoculated by adding 0.2 cc. of a uniform dilute suspension of the fungi. Rotation of the Petri dish was done to further uniform distribution. The agar was then allowed to harden and was incubated at room temperature. The same strains of T. gypseum and of M. albicans were used to inoculate all the plates.

Aided by a grant from the John and Mary R. Markle Foundation.

From the New York Hospital and the Department of Medicine (Dermatology) of Cornell University Medical School.

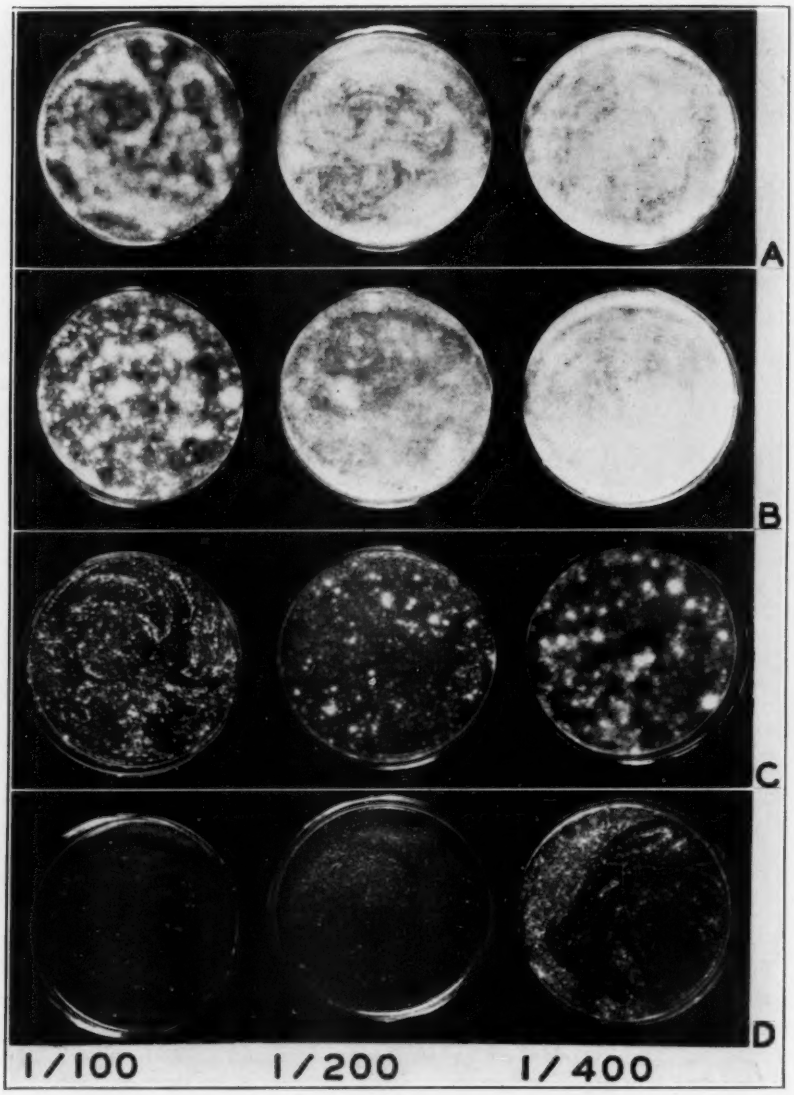


Fig. 1.—Results of seeding T. gypseum on agar to which sulfanilamide or a derivative has been added: (*A*) sodium sulfadiazine, (*B*) sodium sulfathiazole, (*C*) sodium sulfapyridine and (*D*) sulfanilamide. The reading was made after two weeks.

RESULTS

None of the compounds tested had any demonstrable effect on the growth of M. albicans. With T. gypseum, however, on examination after two weeks (fig. 1) some limitation of growth was seen to have been caused by all the compounds, and complete retardation of growth had been accomplished by means of sulfanilamide in a dilution of 1 per cent. After three weeks minute colonies began to appear. It was further noted that the sodium salts of sulfathiazole and sulfadiazine showed some slight fungistatic effect, whereas neither of the parent compounds had any growth-inhibiting effect (fig. 2).

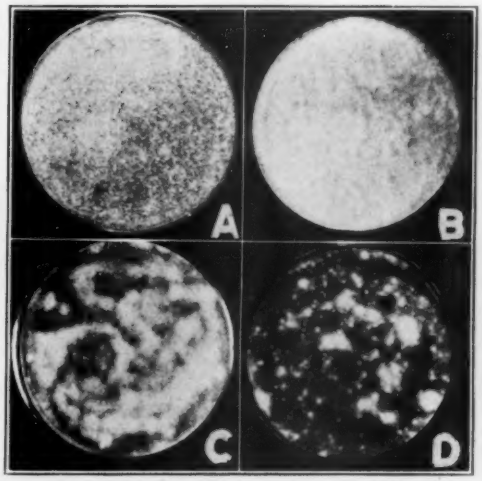


Fig. 2.—The sodium salt is apparently a more effective fungistatic agent than the parent compound. This may be due to its greater solubility. *A* indicates sulfadiazine; *B*, sulfathiazole; *C*, sodium sulfadiazine, and *D*, sodium sulfathiazole.

COMMENT

The p_H of the dextrose medium was 5.6; growth of T. gypseum for three weeks changed this to 6.6. The agar containing both sulfathiazole and sulfadiazine had a p_H of 6.6. The agars containing the three sodium salts had a p_H of 8.2. The p_H of the agar containing sulfanilamide was 6.2. These observations indicate that the p_H was not contributory to the results.

SUMMARY

Sulfanilamide and five derivatives were tested as fungistatic agents against two species of fungi. No inhibiting effect on the growth of M. albicans was observed. There was some fungistasis of T. gypseum with all the compounds and complete retardation of growth for three weeks with sulfanilamide.

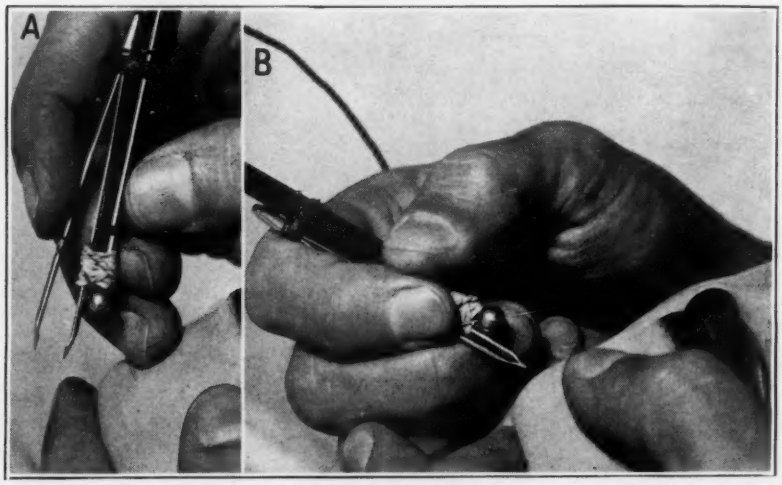
121 East Sixtieth Street.

Clinical Notes

A COMBINED EPILATION NEEDLE AND FORCEPS HANDLE

H. C. Goldberg, M.D., Plainfield, N. J.

In a recent issue of the Archives Dr. J. M. Shelton[1] described a thimble forceps which he used as a time saver in treatment by electrolysis. This obviates the need of picking up and laying down the epilation forceps. One of my colleagues, Dr. Sydney J. Robbins, carries this one step further and has attached



Combined epilation needle and forceps handle. *A*, position during insertion of the needle. *B*, position during removal of the hair by the forceps.

his epilation needle handle as well as his forceps to a separate thimble. Actually, as much or more time is lost in stretching the skin preparatory to the insertion of the needle as in picking up the forceps.

A simple and efficient instrument combines the epilation needle and forceps on one handle. The forceps is readily attached to the handle of the epilation needle by two ordinary rubber bands, as shown in the accompanying photograph, by transparent tape or by more permanent means if desired. With this arrangement, one hand is used to stretch the skin prior to the insertion of the needle. The other hand inserts the needle into the hair follicle in the prepared area of skin. A deft turn of the instrument after the treatment of the hair is completed enables the operator to grasp the hair and remove it with the forceps. This area of skin is still in position, ready for the next insertion of the needle.

1. Shelton, J. M.: A "Thimble Forceps" for Epilation, Arch. Dermat. & Syph. **44**:260 (Aug.) 1941.

The treated hair cannot be tested for "loosening" without removing the needle, but this is not always necessary with the galvanic electrolysis machine and is seldom done with the newer modified high frequency current machine, for which this combination of instruments is particularly designed.

Suite 220 Union Building.

DERMATITIS CAUSED BY TINCTURE OF MERTHIOLATE

CLIFFORD B. CHERRY, M.D., LOS ANGELES

The following case is reported to call attention again to the fact that medicinal agents commonly used without any complications may occasionally produce severe dermatitis venenata. Tincture of merthiolate is used extensively, and yet the incidence of severe dermatitis following its use is extremely small, judging from the infrequency of the reported cases in the literature. Because of the raritv of such a complication this preparation may be overlooked as a possible causative agent and even continue to be used in treatment, as in the following case.

REPORT OF A CASE

A white man aged 41, employed in a warehouse, on Feb. 27, 1941 received two abrasions on the flexor surface of the left forearm when a cable thrown from a truck bed struck his arm. These lesions were treated by a first aid man with some unknown ointment and the next day were somewhat red and swollen. The physician to whom he was referred painted the areas with tincture of merthiolate and applied some other medication which the patient could not describe. On the following day many small vesicles were present around the original lesions and the area was oozing, red and swollen. He was then transferred to the care of another physician, who for the next three weeks treated the lesions with tincture of merthiolate, various ointments, gentian violet and ultraviolet radiation. During this time the lesions on the left forearm continued to spread until they involved almost all of the extensor and flexor surfaces of the forearm and a portion of the upper part of the arm. Pruritus, burning and throbbing of the arm were so intense that the patient was without sleep much of this time. On March 6, seven days after the initial injury, numerous small, intensely pruritic vesicles were present on both hands, fingers and thighs. He was referred to the Golden State Hospital on March 22, three weeks after the onset, and was hospitalized at that time because of the severity of the dermatitis.

Examination showed on the left forearm and arm a red edematous area in which there were vesicles, papules and pustules, with a serous and purulent exudation. On the fingers and dorsa of the hands there were numerous small vesicles. Similar lesions were noted on the medial surfaces of the thighs. On the left foot there were scaling and maceration between the toes. There were enlarged

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From the Department of Medicine, Golden State Hospital.

tender lymph nodes in the axillas. Examination of the urine and the blood count showed no abnormalities. Smears from the vesicles and scaling areas were negative for fungi. A Gram stain of a smear from the serous and purulent material of the left forearm revealed numerous pus cells and gram-positive cocci, singly, in pairs and in groups and with an occasional short chain.

About twenty-four hours after the patient's admission to the hospital the right cubital fossa was painted with tincture of merthiolate prior to taking of blood for a routine Wassermann test. Within a few hours after the application of the tincture of merthiolate burning and pruritus were noted in this region, which had previously been unaffected by any eruption. The following day this area was edematous, oozing and covered with numerous small vesicles. This application, then, served inadvertently as a patch test. The decided reaction and the similarity to the lesions on the left forearm pointed to tincture of merthiolate as the causative agent. Its continued use during the first three weeks of the illness probably accounted for the progressive increase in severity of the condition during this time. The subsequent course consisted of application of continuous compresses and soaks, at first of boric acid solution and then of physiologic solution of sodium chloride, to the involved areas, together with heavy sedation for the intense pruritus and burning pain. At the end of ten days the lesions were greatly improved, and after another seven days, during which time bland oily ointments were used, all of the dermatitis had disappeared.

SUMMARY AND CONCLUSION

A case of severe dermatitis medicamentosa following the use of tincture of merthiolate on two minor abrasions is reported. This should not discourage the use of this preparation, since the occurrence of such complications is apparently decidedly infrequent.

423 Towne Avenue.

ALOPECIA TRIANGULARIS CONGENITALIS

Report of a Case

ORLANDO CAÑIZARES, M.D., NEW YORK

Under the title of alopecia triangularis congenitalis Sabouraud [1] described a type of congenital alopecia occurring on the temples. It is characterized by a unilateral or bilateral patch of complete alopecia of triangular form. Its base is directed toward the forehead, and its longest diameter is 1 to 1½ inches (2.5 to 4 cm.) long. No treatment is of avail.

From the Department of Dermatology and Syphilology, New York University College of Medicine, and the Dermatologic Service of the Bellevue Hospital, service of Dr. Edward R. Maloney.

1. Sabouraud, R., in Darier, J., and others: Nouvelle pratique dermatologique, Paris, Masson & Cie, 1936, vol. 8, p. 11.

The condition is extremely rare. Sabouraud saw it only 5 or 6 times. Galewsky [2] observed 1 case, in which it was bilateral. No other case has ever been reported. In English literature the only reference to this condition was made by McCarthy.[3]

Sabouraud stated that this anomaly should be known so that it will not be mistaken for alopecia areata and treated unnecessarily.

REPORT OF CASE

J. D., a white man aged 37, a boxer, was admitted in the dermatologic wards of Bellevue Hospital on March 12, 1938 because of an eczematous eruption of the

Patient with alopecia triangularis congenitalis.

legs. On routine physical examination bilateral patches of alopecia were noticed on the temporal regions. The patient stated that they had been present as long as he could remember. The lesions were located where the frontal and temporal regions meet. They were triangular. The base, 1 inch wide, was on the forehead; its longest direction, 1½ inches, was directed toward the vertex. The alopecia on these patches was complete, but the skin was normal. No signs of scarring or atrophy were noticed. For the last few years only the patient had also presented alopecia prematura of the frontal region.

601 West One Hundred and Thirteenth Street.

2. Galewsky, E., in Jadassohn, J.: Handbuch der Haut- und Geschlechtskrankheiten, Berlin, Julius Springer, 1932, vol. 13, pt. 1, p. 193.

3. McCarthy, L. C.: Diagnosis and Treatment of Diseases of the Hair, St. Louis, C. V. Mosby Company, 1940, p. 135.

AINHUM

Report of a Case

JACOB M. TESKE, M.D., DURHAM, N. C.

Ainhum is a rare and interesting condition which is peculiar to the Negro. It is characterized by spontaneous amputation of the fifth toe; however, other toes or, rarely, a finger may be affected. It occurs more frequently in certain parts of the world, such as the west coast of Africa, the West Indies and some parts of South America, but in the United States it occurs relatively infrequently.

Ainhum. Note the ring of scar tissue encircling and constricting the base of the fifth toe. There is also characteristic outward rotation of this toe.

REPORT OF CASE

W. A., a Negro aged 49, a miner, came under my observation at Empire, Ala., on May 2, 1940. He gave a history of having had a constriction around his right little toe for a year. During that time the condition was entirely painless. Four months prior to the time of observation he began to have considerable pain in his right fifth toe, especially when walking or standing. Itching of the toe had also been present for about four months prior to the time of observation.

He had had the usual childhood diseases but stated that he had never had gonorrhea or syphilis. He was born in Alabama and had always resided in that state. There was no history of any other member of his family having had a similar condition.

Examination revealed that he was well developed and well nourished. The systolic blood pressure was 130, the diastolic blood pressure 80, the temperature 98 F. and the pulse rate 60. The Wassermann reaction of the blood was negative. The general examination showed no abnormalities except dental caries.

His right fifth toe had a constriction around its base giving it a club-shaped appearance. On the medial portion of the digitoplantar fold there was cracking of the skin with slight ulceration. From this point a hard uniform cicatricial band encircled the entire toe. The distal segment was hard and somewhat spherical with lateral rotation, there was no evidence of beginning gangrene. There was no evidence of a tinea infection or other disease of the skin. The circulation of the foot was good, the dorsalis pedis artery having good pulsation. The other toes of both feet were apparently normal. He was referred to the surgical service for amputation of the fifth toe. The convalescence was uneventful, and five weeks after amputation he returned to work. Four months later he was apparently in good health, with no subjective symptoms.

COMMENT

This case was one of ainhum in the early stages, in which the cicatricial ring had extended around the entire circumference of the toe but no gangrene had developed.

The disease begins as a small circumscribed depression in the skin at the medial digitoplantar fold of the fifth toe. This gradually extends laterally and entirely encircles the toe with a band of scar tissue. The distal portion of the toe becomes edematous, and as the cicatricial ring contracts and impairs the blood supply the toe becomes gangrenous. In the advanced stages the toe is attached by only a small pedicle of fibrous tissue and may become amputated by minor truama or may be easily detached by the patient.

Pain is usually absent during the early stages but becomes prominent in the more advanced stages, although a number of cases have been reported in which pain was entirely absent.

Post Office Box 2172.

News and Comment

AMERICA'S AIR SERVICE

If the nation's air program is to succeed, it is vital that public attention be immediately directed to building an adequate flying personnel to man the thousands of planes which will soon be ready for use. No person applying for training as a pilot should be rejected if there is the slightest chance that he may be turned into suitable flying material. Many applicants for the Air Service are rejected because of minor physical defects. Many of these can be corrected by medical, surgical or dental assistance. The Medical Division of the American Flying Services Foundation has been developed for the purpose of providing on a nonprofit basis the necessary care and treatment of these applicants who are otherwise acceptable for enlistment. This medical service is now being rendered at numerous centers in the United States, and many additional ones must be organized for this work. The medical headquarters are located in the Medical Chambers at 140 East Fifty-Fourth Street, New York, and enjoys the cooperation of a medical council composed of distinguished physicians and dentists.

Regional committees are being formed in various localities throughout the United States. The First, Second, Fourth and Fifth Corps Areas are the centers of operations at present. Other corps areas will be developed providing necessary finances are received by public contributions. Through the Regional Medical Committee, the Foundation finds the physician, the clinic, the hospital and the other necessities for the care and treatment of the applicants. The longest period thus far spent in a hospital by an applicant has been fifteen days. A high percentage of these men continue their usual vocations while under treatment, and nearly all of those referred to the Foundation have been successfully treated and have been reexamined and accepted by the Air Service. The members of the Medical Council and the regional medical committees have given their services gratis or have charged only for material used or extremely small fees.

The Foundation is young and entirely dependent on public contributions for its support and will go forward as rapidly as finances permit. Certainly there is no more worthy cause than to repair the physical defects of young Americans, thus contributing additional personnel for the Air Service.

Abstracts from Current Literature

EDITED BY DR. HERBERT RATTNER

RETINAL LESIONS IN LUPUS ERYTHEMATOSUS. A. E. MAUMENEE, Am. J. Ophth. **23**:971 (Sept.) 1940.

This essay comprises a brief review of the clinical and pathologic characteristics of acute disseminated lupus erythematosus, with special reference to previous ophthalmic observations. The case histories, including postmortem examination, of 4 patients with acute and 1 with chronic lupus erythematosus are recorded in detail. Minutiae of the ophthalmoscopic and histologic observations in the eyes are described.

SURGICAL TREATMENT OF SYPHILITIC OPTIC ATROPHY. L. HAUSMAN, Am. J. Ophth. **24**:119 (Feb.) 1941.

The author states that the syndrome of syphilitic chiasmal arachnoiditis has hitherto been diagnosed as tabetic atrophy of the optic nerve. While cases of syphilitic atrophy of the optic nerve due to parenchymatous disease of the nerve probably predominate, the outlook on the pathogenesis of syphilitic atrophy of the optic nerve should be broadened. The point to be emphasized is that adhesions may exist at the base of the brain with or without signs of tabes dorsalis of the spinal cord. When patients with syphilis and primary atrophy of the optic nerve present heteronymous visual field defects or multiple lesions of the cranial nerves adjacent to the optic nerve, or when primary atrophy of the optic nerve and syphilis are the only signs present, adhesions at the base of the brain in the region of the chiasm should be suspected. The author cites 6 cases of syphilitic arachnoiditis of the optic chiasm, in 3 of which operation was performed. In all 3 the clinical results of operation were sufficiently good to warrant careful consideration of the surgical approach in cases in which there is evidence to indicate that true parenchymatous optic neuritis is not the cause of the blindness present. This subject should receive serious thought from the clinical syphilologist, as opportunities to preserve vision may have been lost through failure to recognize this condition and its surgical treatment.

WIEDER, Milwaukee.

LONG-TERM RESULTS IN THE TREATMENT OF EARLY SYPHILIS. PAUL PADGET, Am. J. Syph., Gonor. & Ven. Dis. **24**:692 (Nov.) 1940.

Records of 6,000 patients with early syphilis were reviewed. Five hundred and fifty-one patients were reexamined five years or more after termination of original treatment for early syphilis. The final outcome of all these patients is tabulated; 362 of them were classified as "cured," and the remainder had mild to severe manifestations of late syphilis. Systems of treatment, drugs and their dosage are evaluated. It is fairly well established that the continuous method of treatment is far superior to all other methods. It was also noted that an early or intermediate relapse is of ominous prognostic significance.

LATE CONGENITAL SYPHILIS. FRANK R. SMITH JR., Am. J. Syph., Gonor. & Ven. Dis. **24**:755 (Nov.) 1940.

Observations on 39 patients with congenital syphilis who were over 25 years of age at the time of admission are presented. The typical signs and symptoms of late congenital syphilis as seen in these cases are tabulated. Emphasis is placed on the fact that over 90 per cent of the objective signs of late congenital syphilis are to be found in or about the structures of the head.

LYMPHOGRANULOMA VENEREUM AS A SYSTEMIC DISEASE. TIBOR BENEDEK and DORA B. OLKON, Am. J. Syph., Gonor. & Ven. Dis. **25**:28 (Jan.) 1941.

A case of a 44 year old white man with lymphogranuloma venereum is described. He showed scattered papulopustular lesions on the trunk and shoulders with ulcerated lesions on the inside of both thighs near the inguinal region, on the scrotum and on the anterior surface of the penis. There was no involvement of regional lymph nodes. The patient also had iritis which appeared simultaneously with three attacks of the ulcerated lesions, the latter occurring always on areas of the skin which had not been involved before. Miyagawa's elementary bodies were demonstrated in sections of the ulcers by means of Giemsa stain and of Victoria blue 4 R stain. The conclusion is reached that lymphogranuloma venereum is in all its manifestations a systemic disease and not a local condition.

EARLY SYPHILITIC HEPATITIS WITH JAUNDICE. HERBERT RATTNER and R. M. REIFLER, Am. J. Syph., Gonor. & Ven. Dis. **25**:56 (Jan.) 1941.

A patient with untreated secondary syphilis, acute hepatitis and jaundice was successfully treated with an arsenical preparation.

A SURVEY OF SIXTY-EIGHT CASES OF EXTRAGENITAL CHANCRES. U. J. WILE and HERBERT H. HOLMAN, Am. J. Syph., Gonor. & Ven. Dis. **25**:58 (Jan.) 1941.

Sixty-eight cases of extragenital chancre are reviewed. The cases were collected over a twenty-five year period. Forty-three occurred in men and 25 in women. Locations in order of frequency were: lip, tonsil, digit, tongue, pharynx, palm, breast, forehead, chin and arm. It is emphasized that the presence of syphilis should always be considered in the presence of any single lesion in association with a regional lymphatic enlargement which does not respond to ordinary therapeutic measures.

ETIOLOGIC CONSIDERATIONS IN POSTARSPHENAMINE DERMATITIS. FRANK E. CORMIA, Am. J. Syph., Gonor. & Ven. Dis. **25**:189 (June) 1941.

The author states that postarsphenamine dermatitis develops in from 0.3 to 1 per cent of all patients treated with trivalent arsenical drugs. Dermatitis from the arsphenamines in human beings is largely a manifestation of epidermal sensitiveness of the delayed cellular type. It is caused by previous exposure and is made manifest by subsequent exposure to the same or to related arsphenamines.

Dermatitis after intradermal and paravenous injections has been noted frequently. Nonallergic types of dermatitis, such as the seborrheic state, are also well known as secondary local contributory factors.

Vitamin C has been mentioned as being useful in the prevention of further reactions and of benefit in the treatment of arsphenamine dermatitis.

The author made a study of 6 patients all with previous postarsphenamine dermatitis, confirmed by positive reactions to patch tests. They were given 500 mg. of ascorbic acid intravenously daily for seven days, after which time the same brand of arsenic which had previously caused the dermatitis was cautiously given in small initial doses. Ascorbic acid levels in the blood were kept high by the subsequent administration of 100 to 200 mg. daily. Five of the 6 patients finally took full doses of the arsphenamine, and the reactions to the patch tests became negative in 3 of 4 patients subsequently tested.

REINFECTION IN CONGENITAL SYPHILIS. RICHARD D. HAHN, Am. J. Syph., Gonor. & Ven. Dis. **25**:200 (June) 1941.

Two cases of reinfection in adequately treated patients with congenital syphilis are presented. Criteria of diagnosis for both the congenital and the acquired

type were apparently rigidly fulfilled. The condition in each case doubtless was a true acquired type of syphilitic infection in a patient with congenital syphilis who had previously received adequate treatment. REUTER, Milwaukee.

A CRITICAL REVIEW OF PIGMENT RESEARCH IN THE LAST HUNDRED YEARS. E. MEIROWSKY, Brit. J. Dermat. **52**:205 (July) 1940.

On the basis of a detailed report in which chiefly articles supporting his ideas are cited and from which many excellent opposing investigative reports are omitted, the author concludes that epidermal melanin is formed in situ both by strictly epidermal cells and by dendritic cells, which are morphologic modifications of the former. Dendritic cells are always present but are demonstrated with difficulty except when functionally hyperactive. Epidermal pigment is cast off in part in the stratum corneum and is carried in part to the lymph nodes. The origin of dermal pigment is not definitely known, but it may be formed in situ. The dopa reaction of Bloch is no longer considered a specific reaction, since substances other than 3, 4-dihydroxyphenylalanine produce faint reactions. Cells are capable of forming melanin even though they do not show a positive dopa reaction. In these cells pigment formation is assumed to be catalytic rather than enzymatic. Epinephrine or its oxidation products may be important as forerunners of melanin. The nucleus is the progenitor of melanin pigment.

BECKER, Chicago.

INOCULATION OF MONKEYS WITH LEPROSY, FOLLOWING A DIET OF PUAK (COLOCASIA): A PRELIMINARY REPORT. D. R. COLLIER, Leprosy Rev. **11**:135 (July) 1940.

In accordance with Oberdoerffer's ideas on the role of adrenal insufficiency in the production of predisposition to leprosy, presumably caused by sapotoxins in certain food plants, it was thought worth while to attempt to infect animals with leprosy after a preliminary diet rich in such foods.

Experiments on monkeys and pigs have given interesting results. If leprosy in monkeys runs a course like that in man, a long incubation period may be expected, and long periods of observation will be necessary before final judgments can be made.

Of 4 female monkeys inoculated with leprous material after a diet of colocasia, all showed Mycobacterium leprae in the nasal smears and other signs of leprosy, such as positive ear and skin clips and enlarged nerves. One male monkey, given injections of sapotoxin in addition to a diet of colocasia, also had abscesses containing acid-fast bacilli, cutaneous changes and possibly paresthesia. Other inoculated male monkeys showed no signs or symptoms of the disease. No inoculated control monkeys have shown any of the symptoms noted for the inoculated animals which have been fed on colocasia.

No previous attempts to infect animals with leprosy have been made with such rigid criteria of infection.

If these experiments provide a laboratory animal available for the study of leprosy, much more rapid progress in the study of this disease may be expected.

THE USE OF DIPHTHERIA ANTITOXIN AND TOXOID IN LEPROSY: A PRELIMINARY REPORT. D. R. COLLIER and J. HUGH MCKEAN, Leprosy Rev. **11**:140 (July) 1940.

Oberdoerffer advanced the theory that adrenal insufficiency, sometimes caused by the presence of sapotoxin in certain foods, predisposes persons to leprosy. It is well known that the body forms antibodies against diphtheria toxin, which essentially damages the adrenals, and does not tend to form such antibodies against leprosy. It might be possible that diphtheria antitoxin would neutralize leprosy toxin elaborated during the stage of leprous reaction.

A number of patients who were having repeated leprous reactions were given diphtheria antitoxin during the acute stage. After an initial intensification of symptoms, clinical improvement occurred. The reaction subsided; the leprous nodules flattened; the elevated red areas became brown, and the overlying skin became scaly and crinkly. Microscopic examination showed fragmentation and granulation of the bacilli. All these signs are usually associated with acquisition of natural resistance to leprosy and signify that the infection is past its peak. No such changes were induced in control cases, in which tetanus antitoxin or antivenom was administered in place of diphtheria toxin.

Since these results were so encouraging, it was decided to try diphtheria toxoid. Improvement started within two weeks and manifested itself by change in pigmentation from red to brown and a wrinkling effect of the skin, indicating shrinking of the nodules and flattening of the plaques. Granulation and fragmentation of bacteria occurred. Some patients experienced paresthesia of areas formerly anesthetic; some had complete return of sensation, and 1 had return of function of a partly paralyzed hand. More than 50 per cent of the patients with enlarged nerves showed decrease in size of the nerves and improvement of sensation. The general condition of the patients decidedly improved.

For a characteristically chronic disease, observation of new methods of treatment must cover a long time. These observations, it is hoped, will, when given the test of time, confirm the impression that in the administration of diphtheria toxoid and antitoxin a new method of treatment of leprosy is available which brings definitely beneficial results.

FRUMESS, Denver.

TRANSMISSION OF LEPROSY TO MONKEYS FED SAPOTOXIN. MANFRED OBERDOERFFER, Dermat. Wchnschr. **109**:1407 (Dec. 30) 1939.

The author expresses the opinion that ingestion of the plant Colocasia antiquorum, containing sapotoxin, is responsible for the severe lepromatous type of leprosy. Sapotoxin is harmful to the adrenals.

He succeeded in transmitting leprosy to 4 Macacus rhesus monkeys which had been put on a diet of raw colocasia and fruit juice starting one month prior to the inoculation. Nodules containing bacilli developed at the site of the inoculation. Three of the monkeys also showed erythematous swellings on various parts of the body. In these lesions bacilli could not be found. One monkey had a positive nasal smear after nine months. In the neighborhood of the inoculation infiltrated nodules formed, in which a small number of bacilli were found, but not regularly. Monkeys on a normal diet did not get primary local swellings or secondary lesions. The author states the belief that he succeeded in producing true clinical leprosy and that the ingestion of plants containing sapotoxin made the animals susceptible to the infection.

A CASE OF KERATOSIS FOLLICULARIS (MORROW-BROOKE). OSKAR PIECZKOWSKI, Dermat. Wchnschr. **111**:743 (Aug. 31) 1940.

Keratosis follicularis (Morrow-Brooke) and acneform comedo-like keratosis follicularis (type Siemens) represent two manifestations of acneform follicular keratoses. The case of a 14 year old boy is reported in which the condition was of eight years' duration. The parents were free from diseases of the skin. Among four siblings only one older brother showed similar lesions of the skin, also since his sixth year. Cutaneous lesions occurred on the face, the chest, the neck and the upper and lower extremities. The palms and the soles and the dorsa of the feet were free. There were no changes of the buccal mucosa or of the nails. The lesions were oval and round and brownish red and varied in size from that of a pinhead to that of a lentil. They were not grouped. New lesions showed horny centers and looked like swollen follicles; older lesions, having lost their horny elevations, presented the picture of moderately deep funnels. The lesions

healed with slightly shunken scars. Histologic examination showed the rete widened. Inside the follicle horny plugs were found which had pressed through the epidermis and left only a few rows on both sides of the funnel. Occasionally the duct of a sweat gland was also involved. The plug consisted of parakeratotic cells. Mild perivascular infiltration was present in the cutis. Pronounced edema, enlarged vessels and an increased number of capillaries were visible near the involved follicle. Papulonecrotic tuberculid, Darier's disease and Kyrle's hyperkeratosis follicularis et parafollicularis in cutem penetrans could be ruled out by histologic examination.

HELEN O. CURTH, New York.

ROLE OF THE THYROID GLAND IN THALLIUM INTOXICATION. G. S. USPENSKAYA, Vestnik ven. i dermat., 1939, nos. 2 and 3, p. 78.

Experiments with rabbits proved that the thyroid gland does not play a role in the production of alopecia by thallium. The experiments indicated also that the use of thallium is contraindicated in the presence of hyperthyroidism.

A CASE OF SYPHILITIC PHLEBITIS. B. G. LEVI, Vestnik ven. i dermat., 1939, nos. 2 and 3, p. 84.

The author reports a case of a man aged 32 in whom in the course of a secondary syphilitic papular eruption phlebitis developed in both legs. After four injections of a bismuth preparation and two of arsphenamine the tenderness over the veins subsided, the color of the overlying skin became normal and the veins became softer and thinner.

ROENTGEN DIAGNOSIS OF SYPHILITIC OSSEOUS CHANGES IN STILLBORN INFANTS AND IN INFANTS WHO DIED SOON AFTER BIRTH AS A METHOD OF DETECTING SYPHILIS IN THE MOTHERS. V. P. PANOV, Vestnik ven. i dermat., 1939, nos. 2 and 3, p. 86.

Twenty-five stillborn infants and 23 infants who died soon after birth were examined with roentgen rays for osseous changes. In 16 subjects specific changes were found; in 10 of these there were periostitis and osteochondritis. In 5 the changes were slight, suggestive only of osteochondritis. Of 8 macerated fetuses, 3 had distinct syphilitic changes in the bone, 1 had suggestive changes and 4 showed no changes. Of 16 subjects in whom the roentgenograms showed osseous changes, for only 4 was a diagnosis of syphilis made on the basis of these findings only.

The author considers the roentgenographic method of examining newborn children as valuable in detecting syphilis in mothers.

A CASE OF GENERALIZED FAVUS INFECTION. M. G. REIF, Vestnik ven. i dermat., 1939, nos. 2 and 3, p. 88.

The author reports 2 cases of favus, of six and three years' duration respectively, in 2 sisters, aged 10 and 7 years. In the older girl the scalp alone was affected, while in the other the extremities and the trunk were also involved. Blood cultures showed no organisms. A younger sibling and the parents were free of favus.

EFFECT OF SULFUR BATHS ON THE CARBOHYDRATE METABOLISM OF THE SKIN. A. P. LAVROV and E. P. KOTSHETKOVA, Vestnik ven. i dermat., 1939, no. 8, p. 13.

Rabbits fed a normal or carbohydrate-rich diet showed a diminution of the sugar content of the blood and of the skin after exposure to sulfur baths containing about 200 mg. of hydrogen sulfide per liter.

EPINEPHRINE DROP TEST AS A DIAGNOSTIC METHOD IN DERMATOLOGY. N. V. DOBROTVORSKAYA, Vestnik ven. i dermat., 1939, no. 8, p. 19.

The epinephrine drop test is based on the facts that when dropped on normal skin this drug in the concentration of 1 to 1,000 does not produce any changes, while when applied to a skin which contains even microscopic vesicles it produces paling. Thus the author found positive reactions in areas of eczema lesions and in some areas of apparently normal skin in eczematous persons, in skin of patients with pityriasis rosea and in skin to which a strong current was applied by means of the vacuum electrode. The reaction was negative in patients with pityriasis rubra Hebrae, lichen planus and psoriasis. The authors consider this method as useful in detecting tiny defects of the corneous layer and in the diagnosis of some erythematosquamous eruptions.

CONSERVATION OF SERUM ON GLASS FOR SEROLOGIC TESTS. P. V. PETSHERNIKOV, Vestnik ven. i dermat., 1939, no. 8, p. 50.

For convenient transportation of blood serum to the laboratory the author employed the following method: He spread 1 cc. of serum on a glass slide and put this into the incubator at 30 C. for four to five hours. The formed dry layer was scraped from the slide onto a paper which was sent to the laboratory. Here 1 cc. of sterile physiologic solution of sodium chloride was added to the powder in a test tube and placed for fifteen minutes in a water bath at 30 C. The solution of the dried serum was then ready for serologic tests.

In 348 cases the dried serum gave the same serologic reactions as the usually used serum. It was found also that the dried serum did not lose its specific properties during a period of two months.

TREATMENT OF LUPUS ERYTHEMATOSUS WITH THYMOL. V. I. ARUTIUNOV, E. I. GURVITSH and P. S. SAVINOV, Vestnik ven. i dermat., 1939, no. 8, p. 58.

In 26 cases of lupus erythematosus, in 21 of which the eruption was fixed and in 5 of which it was erythema centrifugum symmetricum, the authors administered intramuscular injections of thymol. The preparation consisted of 9 parts thymol, 3 parts camphor and 21 parts fish oil. The injections were given every two days, starting with 1 to 1.5 cc. and gradually increasing to 2 or 2.5 cc. A course consisted of ten to twelve injections which did not produce any infiltration, pain or other by-effects. In 15 of the cases the lesions started to undergo involution after five to six injections. In 6 cases one or two more courses had to be given, leading to cure in 5 cases. In 12 of the 26 cases the authors used simultaneously an ointment containing bismuth and quinine. The authors consider the use of thymol valuable in the treatment of lupus erythematosus, particularly in conjunction with the local application of a bismuth paste to the lesions.

EVALUATION OF THE DIFFERENT METHODS OF USE OF THALLIUM ACETATE. S. L. LIBERMAN, Vestnik ven. i dermat., 1939, nos. 9 and 10, p. 10.

In order to ascertain the least toxic method of administration of thallium acetate the author carried out experiments on 224 Angora rabbits. Thallium was administered orally, intravenously, intramuscularly, subcutaneously, rectally, by iontophoresis and by local application of alcoholic and aqueous solutions and of a thallium plaster. Of all these methods the application of the thallium plaster proved the most efficient and the least toxic. This method was used by the author in the treatment of 67 patients; 42 with trichophyton infection of the scalp, 17 with microsporon infection, 5 with favus, 2 with sycosis and 1 with hypertrichosis. The majority of these patients were under the age of 15; only 7 were older. The plaster was applied to single or to multiple lesions. Before treatment was started the patients received a thorough general examination, with a careful determination

of the weight. The hair on the scalp was cut short. The affected area varied between 2 and 113 sq. cm. The thallium plaster was somewhat larger than the affected area in order to remove also the hairs at the periphery. The total size of the plaster used in a single patient varied between 3 and 119 sq. cm. The amount of thallium to 1 sq. cm. varied between 2.5 and 10 mg. The concentration of the thallium in the plaster varied according to the weight of the patient and the total area affected, the total amount of thallium varying between 1 and 63 mg., which corresponded to 4 to 13 mg. per kilogram of body weight. Five, 10, 15 and 20 per cent thallium plasters were used on these patients. The 15 and 20 per cent plasters proved particularly efficient in regard to the constancy and rapidity of epilation; but the 10 per cent thallium plaster also proved effective, while with the 5 per cent thallium plaster epilation took place much later than with any of the previously mentioned concentrations. The epilation was strictly limited to the area covered by the plaster. In only 1 case total epilation of the scalp took place. The hair fell out after ten days, and it grew back after three or four weeks. No local or general by-effects were observed. In 30 cases definite cure was established; in 2 fungi were found in the regrowing hair, while 37 cases were still under observation. The author concludes that the application of the thallium plaster is the most efficient and least toxic method of using thallium for the purpose of epilation.

EPILATION PROPERTIES AND TOLERANCE OF THE THALLIUM PLASTER (PROPOSED BY PROF. LIBERMAN) OBSERVED IN THE MATERIAL OF THE COOPERATIVE GROUP. L. N. MASHKILLEISON and A. M. ARIEVITSH, Vestnik ven. i dermat., 1939, nos. 9 and 10, p. 20.

The Central Dermatovenereologic Institute was charged with the task of investigating the epilation effect of the thallium plaster suggested by Prof. S. L. Liberman. Fifteen institutes and clinics took part in this investigation. Four hundred and sixty-seven cases were observed, in 457 of which there was trichophyton, microsporon or favus infection of the scalp, in 3 sycosis vulgaris and in 1 hypertrichosis. In 6 cases the plaster was applied on a normal area of the scalp. In 247 cases the ages were below 8 years, in 204 the ages were between 8 and 17, and in 16 the ages were above 17. The number of lesions varied between one and six or more, and in very few cases the whole scalp was involved. In 233 cases a 20 per cent thallium plaster was used, in 93 a 15 per cent, in 82 a 10 per cent and in 29 a 5 per cent. In the majority of cases the total area affected was not larger than 30 sq. cm., and in a number of cases the affected area was from 30 to 60 sq. cm. or larger.

In the greatest majority of cases the prescribed rule adhered to was to use an amount of thallium below 13 mg. per kilogram of body weight. In the majority of cases the epilation under the plaster started between the ninth and the twelfth day; in others it started on the fifth or on the twenty-fourth day. The epilation began earliest when the 20 per cent plaster was employed. The hair started to regrow three to four weeks after removal of the plaster. With the 20 per cent plaster good or satisfactory epilation took place in 87.6 per cent of the cases; with the 15 per cent plaster, 86.6 per cent; with the 10 per cent plaster, 83.1 per cent, and with the 5 per cent plaster only 40.7 per cent. In 3.8 per cent of the cases no epilation was observed.

Local by-effects were seen in 14.2 per cent of the cases and consisted chiefly of irritation of the skin under the plaster, which disappeared after removal of the plaster. General by-effects took place only in 2.7 per cent of the cases and were very mild.

The authors enumerate a number of points which require further investigation, although they consider this method of epilation of definite value.

BLOOM, New York.

STUDIES ON ABSORPTION CAPACITIES OF THE SKIN AND INTESTINAL MUCOSA. G. KIMURA, Orient. J. Dis. Infants **27**:77 (March) 1940.

For the study of cutaneous absorption the author applied 5 Gm. of hydrous wool fat containing 15 per cent salicylic acid over an area 7 cm. square on the abdomens of albino rabbits. The quantitative estimation of the acid in body fluids revealed that the maximum absorption in the blood occurred in two to four hours after the inunction and was followed by a complete disappearance within seven to nine hours, whereas the maximal urinary excretion took place in three to five hours and a trace was detectable in the urine even after fifteen to twenty-four hours. The speed with which salicylic acid was excreted in the urine varied within thirty minutes in different animals; the total amounts excreted fluctuated between 0 and 1.0 mg. (0 to 30 per cent). Moreover, the differences in time of the first appearance of the acid did not necessarily run parallel with those of the excretion. The rate of excretion was rapid in adult animals and relatively slow in young animals. There seemed to be a definite seasonable influence in the rate of urinary excretion, which was rapid during the summer and slow in the cold weather.

The rate of absorption from the mucous membrane of the intestine was measured by the quantitative estimation of salicylic acid in the blood and urine after its oral administration in doses of 0.1 Gm. per kilogram of body weight. The ingested acid first began to appear in the blood with the maximal concentration in five to seven hours, while the urinary excretion began in one-half to one hour, the maximum values being observed in seven to ten hours. When sodium salicylate was injected subcutaneously the highest blood concentration was found within one hour.

Under certain pathologic conditions the rates of absorption of the test substances were decidedly abnormal. In the presence of acute acidosis absorption from the skin was seriously hindered, as was evidenced by a low blood concentration and a diminished urinary excretion, whereas in the presence of alkalosis the opposite findings were obtained. Somewhat identical results, though less pronounced, were obtained in the rates of absorption from the intestinal mucosa under similar experimental conditions. In the presence of anaphylaxis the cutaneous absorption was remarkably increased during the incubation period and less so during the period of shock. The absorption from the intestinal mucosa followed a similar course, although less marked. When the reticuloendothelial system was blocked by intravenous injection of a sterile india ink suspension, both the absorption and the excretion of salicylic acid given by mouth, smeared on the skin or injected subcutaneously were markedly delayed. In the animals with hepatic damage produced by intramuscular injection of chloroform in olive oil, a general decrease in the speed of both absorption and (consequently) excretion was observed.

KATO, Chicago. [AM. J. DIS. CHILD.]

VACCINE THERAPY IN CHANCROID AND BUBO. M. ANDERSEN, Acta dermat.-venereol. **20**:711 (Nov.) 1939.

The author treated patients with soft chancres complicated by bubo formation with increasing doses of Dmelcos vaccine (225,000,000 to 675,000,000 bacilli per injection) at intervals of two to three days, each new injection being given as soon as the fever had subsided after the preceding injection. It was noted that the bubos responded better than the chancroid to vaccine therapy. This is explained by the fact that the Ducrey bacilli in the bubo come into closer contact with the circulating antibodies than do the Ducrey bacilli in the mixed infected chancre.

SKIN LESIONS DURING THE COURSE OF ULCERATIVE COLITIS. I. R. JANKELSON and CHARLES W. MCCLURE, Acta dermat.-venereol. **21**:255 (March) 1940.

The authors report 7 cases of ulcerative colitis complicated by ulcerative lesions of the skin. The cutaneous infections occurred at the height of an acute exacerbation of the colitis. In 2 out of 3 cases the same organisms were found in the

cutaneous lesions and in the intestinal ulcers. This suggests the possibility of a metastatic origin of the cutaneous infection, but this could not be proved. Lowered resistance probably is an important factor in the development of the cutaneous condition. Various kinds of lesions were observed: punched-out ulcerations, reddened, swollen and indurated areas without abscess formation and also multiple abscesses.

The treatment is discussed. In 4 cases the ulcerations subsided when the colitis and general condition improved.

CLINICAL STUDIES OF CHANGES IN THE SKIN IN MALARIA. A. MARCHIONINI, Acta dermat.-venereol. **21**:299 (March) 1940.

The author describes the cutaneous lesions occurring in cases of malaria (tertian). Chronic malaria causes a marked decrease in the general resistance of the patient. Hyperpigmentation was the most frequently observed cutaneous disturbance. Pigmentary changes usually receded when effective treatment of malaria was instituted. Roseola, morbilliform, scarlatiniform and petechial exanthems and diffuse or circumscribed urticaria were seen. Raynaud's disease and gangrene occurred in a few cases. Various changes in the nails were observed. A very serious complication of chronic malaria was Vincent's infection, leading sometimes to noma, which usually ended fatally. ASTRACHAN, New York.

KAPOSI'S SARCOMA. C. J. HANSSON, Acta radiol. **21**:457 (Oct.) 1940.

This article consists of a study of 23 patients treated at Radiumhemmet, Stockholm, Sweden, between the years 1915 and 1939. Of these, 18 were men and 5 were women. Irradiation was the sole method of treatment. Both roentgen rays and radium were used, the former being used for widespread lesions and infiltrations and radium, by implantation or application, for single tumors. The tumors and infiltrations proved to be radiosensitive, and equally satisfactory results were obtained with both methods of treatment. The author considers that, contrary to assertions made in the literature, the prognosis is hopeful. Seven of the patients have died, but in none of them was there any evidence to prove that Kaposi's sarcoma was the cause of death. The original article is published in English.

WIEDER, Milwaukee.

Society Transactions

NEW YORK ACADEMY OF MEDICINE, SECTION OF DERMATOLOGY AND SYPHILIS

GEORGE C. ANDREWS, M.D., *Chairman*

HERMAN SHARLIT, M.D., *Secretary*

April 1, 1941

A Case for Diagnosis (Leukemia? Leprosy?). Presented by DR. HENRY D. NILES.

J. D., a man aged 48, born in Greece, was first seen at the Skin and Cancer Unit of the New York Post-Graduate Medical School and Hospital on March 20, 1941. His eruption began eighteen months ago, shortly after he returned from a trip to Greece, with a lesion on the forehead. The lesions on the right ear and the wrist appeared later.

In the middle of the lower part of the forehead just above the root of the nose is a dull red, irregular, raised, infiltrated lesion about the size of a bean. The lobe of the right ear is red, swollen and indurated, and the overlying skin is tense and thin and in one area covered with a granulomatous verrucous growth. There is a walnut-sized firm raised bluish red lesion on the dorsum of the right wrist. No pus has been expressed from any of the lesions. There is a small slightly pigmented patch on the dorsum of the left wrist at the site of a former similar lesion. There is some enlargement of the cervical and axillary lymph glands. There are some small white patches on the mucosa of each cheek.

The Wassermann and Kahn reactions of the blood were negative. Microscopic examinations and study of smears from the lesions on the wrist and ear showed no fungi or Donovan bodies. Application of an acid-fast stain to the nasal secretion revealed no lepra bacilli. The histologic examination of a section taken from the lesion on the right wrist showed a tuberculoid structure consisting of many large giant cells, epithelioid cells, lymphocytes and some plasma cells. The diagnosis was chronic granuloma.

The hemoglobin content of the blood was 87 per cent. A blood count showed: erythrocytes, 4,640,000; white cells, 9,000; polymorphonuclear leukocytes, 58 per cent; lymphocytes, 38 per cent; monocytes, 3 per cent, and eosinophils, 1 per cent.

DISCUSSION

DR. FRED WISE: The lesion on the lobe of the right ear resembles leprosy on account of the tumefaction and the color, and the lesion on the forehead could also be interpreted as leprosy. It would be advisable to obtain a puncture of the sternum to rule out leukemia. A good deal of investigative work has yet to be done in order to reach a conclusion. The fact that lepra bacilli were not found does not mean they will not be found on subsequent examination.

DR. LOUIS TULIPAN: I understand that the Wassermann reaction of the blood was negative, but I feel that it would be worth while in spite of this to try a therapeutic test. Certainly one must think of tertiary syphilitic lesions.

DR. OSCAR LEVIN: The patient has tumors. Syphilis can readily be excluded. Leukemia, which was suggested by Dr. Wise, should be considered seriously. There are two other conditions to be considered: leprosy and tuberculosis. The clinical picture suggests leprosy. However, I believe that the blood from incised leprous lesions would swarm with lepra bacilli. I think the patient's lesions belong to a disease in the tuberculosis group, possibly sarcoid. The only point not in favor of this diagnosis is the slight tendency toward necrosis, which may, however, be the result of trauma or scratching. The histologic picture suggests

sarcoid. A tuberculin test should be performed, and if the reaction is negative it would point very strongly toward a diagnosis of sarcoid. I also suggest a roentgen ray examination of the chest and a thorough general examination, including one of the lymphatic structures. There may be evidence of Schaumann's disease.

DR. PAUL GROSS: There is a noticeable difference in color between the lesions on the forehead and ear and the one on the hand, the latter being rather livid. This fact and the appearance of the lesion on the ear make the diagnosis of oriental sore worth considering, in spite of the negative microscopic observations.

DR. GEORGE C. ANDREWS: I feel that a duration of eighteen months, if there is any truth in that statement, is short for leprosy to cause such extensive changes and also short for lupus. I think Dr. Gross's suggestion is worth serious consideration.

DR. HENRY D. NILES: I considered almost all of the possibilities mentioned. As for oriental sore, I have not seen this condition myself, but from the descriptions one would expect ulceration and softening of the lesions after eighteen months. The patient's lesions are surprisingly hard. I tried to obtain pus for mycologic examination, and all I could get was serum. Tuberculin tests were performed today, and the results have not yet been read. A complete blood count showed no evidence of leukemia, but I shall follow Dr. Wise's suggestion and make an examination of the bone marrow.

A Case for Diagnosis (Folliculitis?). Presented by DR. JESSE A. TOLMACH and DR. ELSE A. BARTHEL.

S. S., a woman aged 41, was presented by Dr. Eugene F. Traub before the New York Dermatological Society on Jan. 28, 1941 (ARCH. DERMAT. & SYPH. **44**:508 [Sept.] 1941).

DISCUSSION

DR. LOUIS TULIPAN: I venture a diagnosis of papular rosacea.

DR. OSCAR L. LEVIN: I agree with the diagnosis of folliculitis. The lesions on the chin are typical of that condition. The patient has generalized hypertrichosis. I advise investigating the possibility of ovarian deficiency.

DR. HENRY D. NILES: The patient has hypertrichosis and has been plucking the hairs on the chin. It might be that the lesions are a keloidal reaction to the trauma of plucking the hairs. I saw no pustules, but these lesions may be similar to those of dermatitis papillaris capillitii, but occurring on the chin instead of on the nape of the neck.

DR. JESSE A. TOLMACH: We have considered the idea of keloids. What makes this diagnosis improbable are the facts that the patient has some lesions on the chin where she has never plucked hairs and, further, some of the lesions have subsided and others have appeared within the last year although she has not been plucking the hairs during that time.

A Case for Diagnosis (Senear-Usher Syndrome? Mycosis Fungoides?). Presented by DR. FRED WISE.

D. K., a man aged 67, was presented before the New York Dermatological Society on March 25, 1941 (ARCH. DERMAT. & SYPH. **44**:770 [Oct.] 1941).

A Case for Diagnosis (Senear-Usher Syndrome? Pemphigus?). Presented by DR. JACK WOLF.

G. G., a woman aged 28, was presented at a meeting of the Manhattan Dermatologic Society on Nov. 12, 1940 by Dr. Fred Wise.[1]

1. The transactions of that meeting were not published. A brief description of this case is received just as this issue is going to press; hence it is inserted at the end of Society Transactions, on page 1174.

DISCUSSION OF TWO CASES FOR DIAGNOSIS

DR. CHARLES WOLF: Referring to the first case, that of the elderly man, I believe the lesions on the trunk are characteristic of one disease, viz., mycosis fungoides. My reason for making that dogmatic statement is that there are infiltrated, itchy and persistent patches. They are tumefied in certain areas and superficial in others. The coincidence of bullous lesions in mycosis fungoides might by a stretch of the imagination make one believe one is dealing with two diseases. However, mycosis fungoides being a disease of the reticuloendothelial system, it might well be that some lesions could be pemphigoid; I should therefore classify the whole picture as one of mycosis fungoides.

DR. WILBERT SACHS: The histologic picture in the first case does not fit the diagnosis of pemphigus or of Senear-Usher syndrome. The reticulum, the polymorphic cellular infiltration, the mitosis and the presence of Pautrier abscesses in the epidermis all suggest mycosis fungoides. I have never seen bullous lesions in mycosis fungoides, but at the same time, the histologic picture agrees with such a diagnosis.

The eruption in the second case is not the usual type of Darier's disease but the so-called bullous variety. I doubt if the latter belongs to Darier's disease. Recently I have seen many conditions in which there are intraepidermic bullous lesions, where the cells become free and grouped and look like *corps ronds.* I do not feel that this process is a true dyskeratosis. It is a peculiarity not classified as yet but not the ordinary keratosis follicularis of Darier.

DR. ADOLPH ROSTENBERG: Regarding treatment with adrenal cortex extract, I can report on 1 case. At first the condition was thought to be severe erythema multiforme bullosum, but then a number of large characteristic bullae developed and the diagnosis was changed to pemphigus. Coincidentally the patient had paralysis agitans. He was sent to the hospital and treated for pemphigus but did not improve much. The endocrinologic department tried adrenal cortex extract for the paralysis agitans, and—strange to say—the lesions of pemphigus cleared but the paralysis agitans did not improve.

DR. FRED WISE: In the case of the middle-aged man, I made a tentative diagnosis of mycosis fungoides on clinical grounds. The histologic changes were merely suggestive of that form of granuloma. When the patient presented bullous lesions on the scalp, the diagnosis of mycosis fungoides was questioned. Now, from the clinical symptoms it is believed that the eruption is either the Senear-Usher syndrome or pemphigus. In any event the histologic structure does not correspond to the clinical manifestations.

In the case of the young married woman with clinical symptoms of Senear-Usher disease, the lesions are similar to those of this man, and here again the histologic changes do not correspond to the clinical lesions. The histologic changes were suggestive of Darier's disease. One of the sections actually contained *corps ronds* and small corpuscles and showed other microscopic features of Darier's disease. Pels and Goodman originally described a pemphigoid disease which is congenital, familial and associated with vesicles and which also shows histologic changes that they interpreted as those of Darier's disease; but in a similar group of cases the condition proved to be a congenital and familial pemphigoid disease. It is rather remarkable that in this case, which is probably one of pemphigus, the histologic picture should correspond to that in the case of Pels and Goodman. In arriving at the correct diagnosis, one has to be guided by the clinical features.

DR. GEORGE C. ANDREWS: Bullous lesions are seen in pachyonychia congenita, which is regarded as a mild variety of dyskeratosis follicularis of Darier because of the acuminate harsh keratotic papules that occur on the elbows and knees and sometimes more widely.

DR. FRED WISE: Are the lesions macroscopically bullous?

DR. GEORGE C. ANDREWS: Yes.

DR. WILBERT SACHS: This woman has a bullous lesion, but I cannot agree that it is a bullous lesion of pemphigus. I have seen such a lesion recently in a case of basal cell epithelioma. It is not fair to judge results in this case, because it is not definitely established that it is one of pemphigus. There is a possibility of epidermolysis bullosa.

DR. MAURICE J. COSTELLO: I have been administering desoxycorticosterone acetate to patients with pemphigus vulgaris in the dermatologic wards at Bellevue Hospital since June 1940. About 6 patients have been treated with this preparation to date. It is too early to come to any conclusions, but most of the patients have improved. Two were discharged free of lesions; 1 of these returned several months later with a mild recurrence. Two died of cardiac complications in spite of the fact that the cutaneous manifestations of the disease had practically disappeared. The others are still in the hospital and are progressing favorably. Our impression is that the drug is of value and offers some hope in the treatment of this disease. The dose consisted of 5 mg. daily, injected intramuscularly. There appears to be little intolerance to the drug even when given over a relatively long time, although in 1 patient a fixed eruption developed. When the drug is administered to debilitated patients in the treatment of pemphigus, undue exertion should not be permitted, as there is danger of cardiac collapse or adrenal apoplexy. The dose should be reduced gradually when further administration is no longer necessary.

DR. OSCAR L. LEVIN: I believe that the man presented lesions of pemphigus. As for the question about bullae occurring in the epidermis, it may be said that in pemphigus the bullae are found in various layers of the skin: in the epidermis, between the epidermis and the corium, in the corium and between the corium and the deeper tissues. When the bullae occur in the epidermis the eruption is superficial and the torn, dried lesions suggest lupus erythematosus. I believe the man has pemphigus.

More than fifteen years ago I presented a patient before the Manhattan Dermatologic Society with severe characteristic pemphigus. The patient was subsequently given epinephrine daily and was cured. Recently, in another case of pemphigus, adrenal cortex extract caused progressive improvement, and after several months the lesions were practically cleared. I believe the extracts from the adrenal gland are of value in the treatment of pemphigus.

DR. TIMOTHY J. RIORDAN: When I first examined the elderly man he just stripped to the waist. The eruption on the trunk was uniform, and there was a peacock-feather-like configuration of one of the lesions which suggested mycosis fungoides. There may have been bullae at one time, but I could not find fresh bullae there tonight; the lesions looked as if they had been abraded. All of the lesions—so-called bullous lesions—were in readily accessible areas. When I had the man drop his trousers I found on the thighs and buttocks an eruption which was not uniform, with the lesions slightly infiltrated. I should like to ask Dr. Wise if he has found any really fresh bullae. If not, I should lean toward the diagnosis of mycosis fungoides.

DR. FRED WISE: In answer to Dr. Riordan, I presented this patient before the New York Dermatological Society with a tentative diagnosis of mycosis fungoides. At one time the eruption was confined to the scalp and was not bullous, and I thought it might be a drug eruption combined with mycosis fungoides. Further study leads me to think the correct diagnosis is pemphigus.

In pursuance of Dr. Sachs's remarks about the histologic changes, I think one important fact brought out by these 2 cases is the mistake dermatologists make in not correlating the histologic picture with the clinical appearance. More than 3 cases are on record in which the histologic structure of the Senear-Usher syndrome had been interpreted as Darier's disease, and I do not know of any two other diseases which differ clinically as much as Darier's disease and pemphigus. What I want to emphasize is that in some cases of this kind one cannot depend on the histologic picture alone for arriving at the correct diagnosis.

Ulcerative Syphilid, Interstitial Keratitis and Acrodermatitis Chronica Atrophicans in a Case of Congenital (?) Syphilis. Presented by DR. GIRSCH D. ASTRACHAN.

S. S., a woman aged 51, born in Germany, was admitted to the Skin and Cancer Unit of the New York Post-Graduate Medical School and Hospital on March 11, 1941 with a history of an eruption on her knees and elbows of several years' duration. There was also an eruption on the right ankle of several months' duration.

At the age of 6 or 7 years the patient was treated for "some eye trouble," and in 1923-1924 she received antisyphilitic treatment at the Skin and Cancer Unit.

Examination reveals on the medial aspect of the right ankle a group of dime-sized to quarter-sized ulcerations arranged in semiannular configuration. The borders of these ulcerations are moderately indurated. Several atrophic areas are present in the vicinity of these ulcerations. The right leg and ankle are edematous. There are a few small ulcerations and atrophic lesions about the left ankle. The skin over both knees is bluish red, thin, wrinkled and transparent. On the thighs, the anterior aspects of the legs and the lateral sides of the forearms there are several ill defined, erythematous and somewhat infiltrated areas. Some atrophy of the skin is seen over both elbows and on the dorsum of the right hand. There is a definite clouding of both corneas.

The urine was normal. The Wassermann reactions of the blood were as follows: June 20, 1923, 4 plus; April 1, 1924, 3 plus, and March 11, 1941, negative. A Kahn precipitation reaction on March 11, 1941 was 1 plus. Slit lamp examination (by Dr. Aebli) showed corneal opacities with small branched vessels deep in the cornea. A diagnosis of interstitial keratitis, probably syphilitic, was made.

Histologic examination was made of a specimen from the right ankle. The microscopic diagnosis was eczematized tertiary syphilis (Dr. Sachs). Throughout the cutis, especially the upper part, there were numerous thin-walled dilated blood vessels. About these were a few cellular infiltrates composed of small round cells, wandering connective tissue cells, histiocytes and plasma cells. In the deep part of the cutis there was a moderate fibrosis with a diffuse fibroblast infiltrate. The intima of outlying vessels was swollen; the walls were thickened, and in some places the lumens were almost obliterated. The cellular infiltrate about these vessels was chiefly plasma cells. The overlying epidermis was tremendously acanthotic, and in the central portion there was considerable edema, over which was a crust.

DISCUSSION

DR. CHARLES WOLF: I think the evidence has not been adduced and clarified sufficiently to justify the diagnosis as presented. One should expect to find in a case of congenital syphilis more signs than an interstitial keratitis or scars on the cornea. This might have followed some exanthem, such as measles or scarlet fever. The facts that acrodermatitis is present and that there is ulceration lead me to believe that she may be suffering from a lipoid disturbance. I believe the blood lipoid should be studied to find out whether she has diabetes. My tentative diagnosis is lipoid disturbance.

DR. WILBERT SACHS: I believe there was granulation tissue with dilated blood vessels in the upper part of the cutis, fibrosis in the deep part of the cutis, swelling of the intima of the outlying vessels and a surrounding plasma cell infiltration. The picture of the blood vessels and the granulation tissue lead me to believe the condition is tertiary syphilis. It is not the picture of acrodermatitis with ulceration. There is no atrophy.

DR. EUGENE TRAUGOTT BERNSTEIN: I think the patient had interstitial keratitis in childhood and that these signs are remnants of it. The Wassermann reaction may be positive in childhood and then spontaneously become negative with time. I believe the condition is congenital syphilis with a negative Wassermann reaction and interstitial keratitis.

DR. GIRSCH D. ASTRACHAN: I am of the opinion that this patient has syphilis for the following reasons: At the age of 6 years she was treated for "some kind of eye disturbance," and in 1923-1924 she received adequate antisyphilitic therapy, at which time the Wassermann reaction of her blood was 3 and 4 plus. She received no treatment after that. On admission a tentative diagnosis of late syphilis of the skin in a case of probable congenital syphilis was made. I think this patient has congenital syphilis, because of the presence of interstitial keratitis. It is possible, however, that this condition could be acquired interstitial keratitis. This occurs rarely, but cases of it have been described. Certainly the possibility of this interstitial keratitis being of tuberculous origin should also be considered. However, taking into consideration the history of the patient and the serologic reports and basing my opinion on the histologic report of Dr. Sachs, I feel that the case is one of late manifestations in a congenitally syphilitic patient.

Lichen Planus Atrophicus Annularis. Presented by DR. HENRY D. NILES.

K. D., a white girl aged 15, born in the United States, was first seen at the Skin and Cancer Unit of the New York Post-Graduate Medical School and Hospital on July 18, 1939. At that time she presented several annular lesions with elevated shiny white borders and pigmented atrophic centers, scattered over her face. They were chiefly on the forehead and varied in size from that of a large pinhead to that of a dime. There were a few similar lesions on the extensor surface of her left forearm. The eruption was of two weeks' duration.

Microscopic examination of a specimen from a lesion on the left side of her forehead showed a typical picture of lichen planus: increase in the granular layer, disorganization of the basal cell layer, moderate acanthosis, increased pigmentation and a bandlike infiltrate of round cells in the upper part of the cutis.

The eruption faded slightly after seven intramuscular injections of 0.5 cc. of a 10 per cent solution of bismuth subsalicylate in oil. There was further improvement after four more injections of the bismuth compound and six treatments of ¼ erythema dose of unfiltered roentgen rays, the last of which was given December 9. When seen on July 9, 1940 she stated that her eruption had nearly disappeared but had recurred after a sunburn one week previously. She was then given three weekly injections of a bismuth compound and was not seen again until today.

At present the lesions on her face have the same features as were described on her first visit. The eruption is limited to her face except for the remains of a few lesions on her left forearm. There have never been any lesions on the mucous membranes.

The Wassermann reaction of the blood on July 18, 1939 was negative. Urinalysis on July 27, 1939 showed a slight trace of albumin, many pus cells and no sugar.

Adenoma Sebaceum (Hallopeau-Laredde Type) with Tuberous Sclerosis. Presented by DR. CHARLES KEMM GOOD.

L. T., a girl aged 18, was presented at a meeting of the New York Dermatological Society on Nov. 26, 1940 by Dr. Fred Wise (ARCH. DERMAT. & SYPH. **44**:92 [July] 1941).

DISCUSSION

DR. PAUL GROSS: This case is important as far as the combination of adenoma sebaceum and Recklinghausen's disease is concerned. The histologic structure of the tumor of the scalp definitely ruled out a neurofibroma, and similar observations have been reported in other cases of so-called combination of adenoma sebaceum with Recklinghausen's disease. It seems that such large tumors of the scalp, as well as small fibrous lesions on the trunk and the fibromas at the base of the toe nails, which Dr. Wise mentioned, are all parts of a symptom complex associated with adenoma sebaceum of the face.

DR. OSCAR L. LEVIN: I believe that the adenoma sebaceum is associated with and part of Recklinghausen's disease. The patient presents lesions suggesting a relation to the nervous system. She showed lesions occurring secondary to the removal of a naevus unilateralis, and she also had tuberous sclerosis. The patient gives a history of having epileptic attacks, and these are probably due to the formation of fibromatous tissue in the cerebrum. Recklinghausen's disease includes all of these features. The characteristic lesion is that of neurofibroma, but the histologic structure may be modified.

DR. DAVID BLOOM: I agree with Dr. Gross. Recklinghausen's disease and the syndrome of epiloia are two different entities. The full syndrome of epiloia includes adenoma sebaceum, pigmented nevi of the skin, nodules of neuroglial overgrowth in the brain, tumors in various organs, particularly in the heart and kidney, mental deficiency and epilepsy. One or several of these may be absent. Although neurofibromatous growths may be present in epiloia, these two entities—epiloia and Recklinghausen's disease—should not be confused.

DR. PAUL GROSS: Of course it is understood that the name adenoma sebaceum is not supported by the histologic picture.

DR. JACOB SKEER: I described a case of this kind in 1938 (Adenoma Sebaceum [Pringle], von Recklinghausen's Disease, Subungual Fibromatosis Associated with Epilepsy or Tuberous Sclerosis—a Symptom Complex, *Urol. & Cutan. Rev.* **42**: 110 [Feb.] 1938). It was my conclusion that these conditions were all forms of fibrosis, since in the four diseases described there is fundamentally a tendency to connective tissue proliferation. A histologic examination of a subungual lesion taken from the great toe showed a tendency to formation of new and old connective tissue elements and widening of lymph spaces and vessels.

DR. EUGENE TRAUGOTT BERNSTEIN: I am reminded of a discussion by Dr. E. D. Friedman about three weeks ago in connection with a presentation of a case of adenoma sebaceum and tuberous sclerosis. In his opinion tuberous sclerosis, adenoma sebaceum and Recklinghausen's disease belong to one group. As is well known, the skin and nervous system develop from the same germinal layer, the ectoderm. Injuries to the ectoderm during fetal life may result in simultaneous occurrence of cutaneous malformation and nervous abnormalities. The dividing line between such diseases as adenoma sebaceum, Recklinghausen's disease, tuberous sclerosis and cutis verticis gyrata is difficult to establish. There are many publications which point out clearly that they belong to one group.

Parapsoriasis Guttata. Presented by DR. ISADORE ROSEN.

W. B., a Negro aged 44, came to the Skin and Cancer Unit of the New York Post-Graduate Medical School and Hospital on Feb. 26, 1941 with an eruption of two years' duration.

On the chest, abdomen, back, buttocks and flexor surfaces of the extremities are scaly papular lesions, discrete and in plaques. There are many irregularly shaped depigmented spots, which involve the neck also. There are no subjective symptoms.

There is a history of chancre twenty years ago. The Wassermann reaction of the blood was 4 plus (latent syphilis). Seven years ago the patient received eight intravenous injections, and for the past five months he has been receiving antisyphilitic treatment at the Social Hygiene Clinic of the Department of Health.

The blood, including the differential count, and the urine were normal. Histologic examination of a lesion from the arm revealed "parapsoriasis."

DISCUSSION

DR. CHARLES WOLF: I do not believe the diagnosis can be accepted without some discussion. The eruption is a superficial exfoliative type. The patient is vague in his history but admitted the ingestion of drugs. There are no lesions

such as one would expect to find in parapsoriasis lichenoides chronica or parapsoriasis guttata. I feel that the condition might be a drug eruption.

DR. WILBERT SACHS: The slide shows all the features I would expect to find in parapsoriasis.

Lichen Planus with Spinous Lesions. Presented by DR. DAVID BLOOM.

M. R., a woman aged 43, is presented from the Skin and Cancer Unit of the New York Post-Graduate Medical School and Hospital with an eruption on the face, hands and forearms which has been present for five years. This was originally diagnosed as neurodermatitis. The patient also had asthma and hay fever for thirty years, for which she was treated successfully with injections at the time the eczema appeared five years ago.

One year ago an eruption developed on the trunk and in the left temporal region. The eruption on the back consists of discrete and grouped violaceous, follicular, spinous papules. There are occasional lentil-sized papules which show umbilication. In the left temporal region there are two nickel-sized plaques, slightly raised, with considerable hyperpigmentation. Subjective symptoms consist of mild pruritus.

The Wassermann and Kahn reactions were negative, and the urine was normal. Histologic examination of the lesion from the back showed superficial dermatitis, while the lesion of the temporal region showed lichen planus.

The patient received sobisminol mass by mouth without any resulting changes in the lesions.

Ichthyosis Hystrix. Presented by DR. MAX SCHEER.

M. D., a Negress aged 11 years, was also presented before the New York Dermatological Society this April (this issue, p. 1160). She came to the Skin and Cancer Unit of the New York Post-Graduate Medical School and Hospital today, April 1, 1941, presenting an extensive ichthyotic nevus involving almost the entire body. The free areas are limited to the palms, soles, face and upper aspect of the chest. The neck presents literally a cover of fine, hairlike, jet black prolongations, approximately ¼ inch (0.6 cm.) in length. On the abdomen, the lower portion of the chest and the upper portions of the thighs there is a cornified growth which is much flatter and grater-like. The dorsal aspect of the hands, feet and knees and the cubital and popliteal areas are most severely affected.

DISCUSSION

DR. DAVID BLOOM: The condition in this case resembles the ichthyosis hystrix in the Lambert family, the first affected member of which was presented before the Royal Society in 1731 by Machin (*Phil. Tr. Roy. Soc. London* **37**:299, 1732). An illustration of such a condition in a later generation of the same family was presented by Tilesius in 1802 (*Vogts Mag. f. Naturkunde* **4**:422, 1802). Because of their condition, such patients were called porcupine men.

DR. PAUL GROSS: A picture of a patient with this condition is shown in Andrews' textbook (Diseases of the Skin, ed. 2, Philadelphia, W. B. Saunders Company, 1938). I saw this girl a few years ago, and it worth mentioning that the twin sister of this child has only a small patch of mild ichthyosis on each elbow.

Angioma Verrucosum. Presented by DR. DAVID BLOOM.

L. P., a Negress aged 28, came to the Sydenham Hospital complaining of lesions on the inner aspect of the left thigh which discharge serosanguinous fluid on slight injury. These have been present for the past two years.

In an area the size of a palm are numerous verrucous excrescences, some of which resemble cutaneous horns, some are covered with a bloody crust, and others

discharge serosanguinous fluid. A few pinhead-sized lesions are not covered with warty excrescences and resemble simple angiomas. The past and family histories are negative.

The Wassermann reaction of the blood was negative. Histologic examination of one of the lesions by Dr. Sachs showed numerous small dilated vessels throughout the midcutis and deep part of the cutis. The endothelial lining appeared normal, but the walls were not distinct, seeming to fuse into the surrounding tissue framework. There were several tremendously dilated lymphatics. Little or no inflammation was present. The epidermis was rather thin; the palisade layer was intact and contained a considerable amount of pigment. The surface was verrucous and covered by a moderately increased and densely laminated horny layer.

GEORGE C. ANDREWS, M.D., *Chairman*

HERMAN SHARLIT, M.D., *Secretary*

May 6, 1941

Sarcoidosis (Skin, Bones, Liver, Glands, Lungs, Eye and Brain). Presented by DR. ABRAHAM WALZER.

G. W., an unmarried Negress aged 22, is presented from the department of dermatology of the Brooklyn Jewish Hospital. There is no family or personal history of tuberculosis, cancer or other serious illness. She attributes her present condition to an accident about three years ago in which her head was injured.

The patient was first seen in the ophthalmic clinic on April 30, 1940 because of loss of vision of the left eye of four months' duration. The ophthalmologist made a diagnosis of retinal periphlebitis and choroiditis of the right eye and of bilateral uveitis of probable tuberculous origin.

The patient was then referred to the department of dermatology because of a rash which she said had been present for about two years. This was distributed over the face and extremities. The legs and thighs showed many scattered papules and nodules, some of which were round, firm and dark red, and others were flat with a depressed center and slightly adherent scale (regressing lesions). Some of the lesions had disappeared, leaving either a flat or a slightly depressed atrophic macule or a darkly pigmented one. On the arms the lesions were felt rather than seen; they were subcutaneous nodules of various sizes ranging from that of a pea to that of a hazelnut, with the overlying skin normal in appearance. The face showed numerous lesions similar to those on the lower extremities, intermingled with some acne papules. A lesion was removed from the thigh for histologic study. The cervical, axillary, epitrochlear and inguinal glands were enlarged. One of the epitrochlear glands was excised for histologic examination. General examination revealed crepitant rales over the bases of both lungs and over the apex of the left lung. The liver was enlarged.

About two months later (June 20) the patient was admitted to the hospital and roentgen studies were instituted. The chest showed increased hilar shadows suggesting nodular deposits, and radiating therefrom were numerous linear markings confined chiefly to the lower two thirds of the lung beds. Both hands revealed several cystlike areas in the heads of the metacarpal bones and phalanges. There were similar changes in the metatarsal bones. Roentgenograms of the skull, pelvis and gastrointestinal tract showed no abnormalities.

Extensive laboratory studies were made. Blood counts were, with slight exception, within normal limits. The Wassermann and Kline reactions of the blood were negative. The urine and spinal fluid were normal. The sputum was negative for acid-fast bacilli. The reaction to a Mantoux test was negative, and chemical examinations of the blood showed nothing abnormal. Smears and cul-

tures of aqueous humor aspirated from the left eye showed no abnormalities, and inoculations of the aqueous humor into the anterior chamber of the rabbit's eye and subcutaneously and intraperitoneally into guinea pigs yielded negative results. Electrocardiographic studies revealed severe myocardial involvement.

A short while after admission an iridectomy was performed on the left eye. About six weeks later, on August 1, a beginning shrinkage of the globe was apparent, and it was enucleated the next day.

The histologic features of the excised cutaneous papule and gland were typical of Boeck's sarcoid. There were areas of epithelioid cells separated by septums of connective tissue, with some giant cells. There was no caseation in the masses of epithelial cells. The histologic examination of the eye showed localization of discrete nodules composed of epithelioid cells and giant cells throughout the uveal tract, in the retina and around the vessels.

The patient was discharged from the hospital in September, and until February 1941 she was observed in the various clinics of the hospital. During this period roentgen therapy was given to the left arm and to the chest. The cutaneous lesions on both arms disappeared, but no effect was noted on the hilar and pulmonary lesions.

On Feb. 20, 1941 she was readmitted to the hospital because of convulsive seizures, which were also repeatedly observed in the hospital. Physical examination disclosed a left hemianesthesia to all forms of sensation and tenderness over the left frontal and parietal bones. There was no papilledema, and the visual field was normal. Roentgenograms of the skull and studies of the spinal fluid showed nothing abnormal. Encephalograms revealed normal filling of the ventricular system and subarachnoid cisterns and normal sulci everywhere except in the central area of the left side, where they were widely dilated, suggesting extensive localized cerebral atrophy in this region.

Now the cutaneous lesions are in a regressing stage. Many of those on the lower extremities have completely disappeared, leaving depigmented and atrophic macules of various sizes. Many of the lesions, however, are still partially present as slightly elevated, definitely infiltrated, flat, dark brown papules or nodules with white, depigmented borders. Some of the sarcoid papules are still present on the face, together with a few acne papules. The left eye is artificial.

DISCUSSION

DR. JESSE M. LEVITT (by invitation): Boeck's sarcoid, once almost entirely in the province of dermatology, has become important in practically every field of medicine. Ophthalmology shares the current interest in the disease, and, indeed, many patients present themselves first to the ophthalmologist. The case that Dr. Walzer has presented was notable for the dominant ocular picture. In addition, there were the characteristic changes of sarcoidosis and, finally, convulsive seizures and encephalograms indicating intracranial localization. Lesions of almost every part of the eye and ocular adnexa have been described in the course of Boeck's sarcoid. The most frequent lesion is an iridocyclitis or uveitis which is potentially the most serious single involvement of the entire disease syndrome with the exception of intracranial involvement. Blindness of one or both eyes may result. Most ophthalmologists have considered the uveitis as genuine ocular tuberculosis. The histologic features of intraocular sarcoid have not previously been described. In this case I have been able to show that the ocular involvement represents a true localization of the disease rather than a coincident infection. The histologic appearance corresponds to the changes observed in other involved structures. The underlying cause of the ocular lesion, as of the disease in general, remains unknown. The salient features in this case were: the cutaneous lesions of the face and feet; the histologic changes in the cutaneous and glandular lesions; the retinal periphlebitis and choroiditis of the right fundus oculi, and the nodular epithelioid cell infiltration in the uveal tract and retina of the left eyeball (*Arch. Ophth.* **26**:358 [Sept.] 1941).

There is the same tendency toward spontaneous healing in the lesions of the eye that there is in lesions of other parts of the body, but in a small percentage of cases the lesion is destructive. In this case the left eye was blind because of a malignant uveitis and secondary glaucoma when the patient was first seen, and later the eye began to shrink. Schaumann's disease and benign lymphogranulomatosis are simply some of the many eponyms for this disease. Uveoparotid fever is regarded as a manifestation or phase of Boeck's sarcoid, as is Mikulicz' syndrome in some cases.

DR. DAVID BLOOM: I should like to ask Dr. Walzer if he thinks there is any relation between the negative tuberculin reaction to and the severity of the condition. In the 2 cases reported by Dr. Mendelson and myself (ARCH. DERMAT. & SYPH. **36**:937 [Nov.] 1937), in one of which the condition cleared up spontaneously within a few years, the reaction to a tuberculin test was positive.

DR. ABRAHAM WALZER: Regarding the question of the relation of tuberculosis or of the reaction to a tuberculin test to sarcoidosis: It has been shown that in about 10 per cent of cases the patients have had, have or will have tuberculosis. In cases of sarcoid the reaction to tuberculin is usually negative. When, however, tuberculosis is present or develops, the reaction to tuberculin becomes positive. When the tuberculosis improves and the sarcoid again becomes prominent, the tuberculin reaction again becomes negative. The real relation of sarcoid to the tubercle bacillus, however, is not clear. The epithelioid reaction of sarcoid may be due not to the tubercle bacillus but to the presence of certain lipoids and waxy substances in the tubercle bacillus. Similar substances which have been found in certain grasses and in the colon bacilli have produced sarcoid reactions in animals experimentally. The sarcoid reaction is probably a foreign body reaction rather than a specific reaction to the tubercle bacillus.

Another question raised was the relation of this disease to Schaumann's disease, or Besnier-Boeck disease. The term sarcoid originated with Boeck in 1899, when he described lesions in the skin that he believed simulated sarcoma or leukemic tumors. He believed this condition to be purely a cutaneous disease. Later he recognized his mistake and renamed the condition multiple miliary lupoid because of its granulomatous structure, like that of syphilis or leprosy. In 1906 Darier and Roussy described the other type, the deep-seated nodular sarcoid. Besnier in 1889 described a type of lupus: lupus pernio. But a chilblain lupus or lupus pernio had already been described by Hutchinson in 1869, which was lupus erythematosus on a pernio area. The condition in Besnier's cases was proved to be lupus vulgaris or sarcoid; and in these cases there were also the osseous changes of sarcoid, which were not stressed at that time. Therefore, internal involvement of sarcoid was first described by Besnier, and this disease is sometimes called Besnier-Boeck sarcoid. The internal involvement of sarcoid was therefore not new, and soon sarcoid of internal organs with cutaneous lesions was reported by various investigators. It was then that Schaumann worked up the whole question, systematized the manifestations and called the disease benign lymphogranulomatosis on the basis that sarcoidosis was primarily a reticuloendotheliosis with lesions primarily in the lymphatic system, such as the glands, spleen, tonsils and lungs. The cutaneous manifestations he believed to be secondary and not necessary for a diagnosis. He considered the condition to be a granuloma, like tuberculosis or Hodgkin's disease, with lesions showing no caseation and no tubercle bacilli. Sarcoidosis therefore has been called Schaumann's disease.

Sarcoidosis (Glands, Liver, Lungs and Skin). Presented by DR. ABRAHAM WALZER.

V. D., a Negress aged 26, a houseworker, is presented from the department of dermatology and syphilology of the Brooklyn Jewish Hospital. She has never been seriously ill, and there is nothing in her past history of any importance. A rash appeared two years ago and has remained stationary since.

She shows numerous lesions scattered on the outer surfaces of both arms, especially the right one, the right shoulder and the back of the neck. She also has one on the right cheek and one on the lower lip. These lesions are elevated, hard, round, fairly sharply outlined nodules. They vary in size from that of a large pea (on the lip) to that of a hazelnut (on the right arm). The overlying skin is depigmented and is not adherent, although the lesion on the lip is firmly attached to the mucous membrane. The nodules appear to be subcutaneous and are not tender. Scattered on the outer surfaces of the forearms are a number of smaller lesions which are darker in color and intracutaneous.

The inguinal and axillary glands are enlarged and hard. The liver is enlarged. The spleen is not palpable.

Blood counts were normal, and the Wassermann reaction was negative. Nothing abnormal was noted in the eyes. Roentgen examinations of the hands revealed normal bones. Roentgenograms of the lungs showed considerable infiltration on both sides. The periphery of the root shadows was frayed out, and there was a fine increased density of both lungs.

Histologic study of a nodule removed from the right arm gave a typical picture of a deep-seated sarcoid infiltration.

Sarcoid. Presented by DR. A. BENSON CANNON.

A. D., a 29 year old Irish domestic, was admitted to New York City Hospital, Welfare Island, one week ago complaining of red lesions on the face, extremities and lower part of the back of four years' duration. The lesions first appeared on each cheek in the form of large, dark red, elevated and thickened patches which produced a burning sensation. After one and a half to two years the patches became flat and soft, with yellow and red spots. The arms and legs were then affected with individual nodules which passed through the same process of becoming flat and soft.

The patient has had asthma most of her life. There is no history of tuberculosis in the family.

Examination shows a healthy-looking, well developed and well nourished young woman with bluish red atrophic patches on each cheek the size of a half-dollar, with atrophy and pitted scars the size of a small pinhead. The lesions are soft and smooth. On the extensor surfaces of the extremities and on the lower part of the back are similar red areas, mottled with tan, which are soft and in places atrophic. These lesions on blanching are seen to be made up of yellow nodules that have the appearance of apple jelly nodules.

The Wassermann reaction of the blood was negative. The blood count was normal, and roentgenograms of the bones were normal. A roentgenogram of the chest showed numerous old scars throughout the lungs, probably from an old tuberculous infection.

Sporotrichosis. Presented by DR. JACOB SKEER.

J. H. M., a 63 year old widower, born in the United States, came to the Cumberland Hospital, Brooklyn, complaining of "boils" on the left forearm. The patient stated that about the middle of December 1940 something bit him on the tip of the left fourth finger, which became swollen and inflamed. Then several "boils" appeared on the back of the hand and gradually, over a period of time, extended to above the elbow.

The patient was born and had been brought up in New York. He began to work at the age of 13 and has had various occupations since that time, including that of grocery clerk, errand boy, butcher and newspaper vender. At the age of 20 he became a truck driver, handling materials such as hides, coffee and rubber. He was also a longshoreman and handled similar general cargoes. The patient claims that he has not worked for the last three years. He had always been in good health until May 25, 1940, when a diagnosis of varicose veins was made.

In June 1940 a diagnosis of hypertension and arteriosclerosis was added. His blood pressure at that time was 200 systolic and 140 diastolic, and an electrocardiogram showed myocardial damage. He was given elixir of phenobarbital and elixir of three bromides N. F.

Examination reveals several pea-sized pinkish nodules on the tip and the lateral border of the left fourth finger, with superficial excoriations. On the back of the hand and extending onto the forearm above the elbow are numerous bean-sized bluish and violaceous nodules with central necrosis. Some of the lesions are covered with thick crusts. Several have broken down and are exuding a thick pus tinged with blood. There are numerous subcutaneous nonpainful nodules attached to the overlying skin. Several scars can be seen, the remains of healed lesions.

On May 28, 1940 the Wassermann and Kline reactions were negative; they were doubtful on June 6 and negative on August 27 and again on March 20, 1941. The urine was normal on June 5, 1940, and chemical examination of the blood the following day showed a sugar content of 110 mg. and a urea nitrogen content of 150 mg. per hundred cubic centimeters. An electrocardiogram showed hypertension and arteriosclerosis. On March 4, 1941 a direct smear failed to show fungi. A positive culture was seen with beginning characteristic growth on April 12, 1941. This was reported by Dr. S. Polayes of the Cumberland Hospital. The culture was sent to the United States Public Health Service, Department of Zoology, and was there identified and confirmed as Sporotrichum schencki. A culture grown at the Skin and Cancer Unit of the New York Post-Graduate Medical School and Hospital likewise showed a characteristic growth, reported on May 6, 1941.

Histologic examination was made by Dr. Henshel, of the Skin and Cancer Unit. The epidermis showed little change. In the cutis were seen large masses of granulation tissue consisting of epithelial cells, lymphocytes, fibroblasts, polymorphonuclear leukocytes and plasma cells. In these areas the connective tissue was degenerated. No tubercle formation was noted, and no fungi were observed. The diagnosis was granuloma.

DISCUSSION

Dr. E. William Abramowitz: I agree with the diagnosis on clinical grounds. Such cases are rare in New York. In the agricultural West this condition is considered an occupational disease. This man must have contracted it in the course of his occupation as a truck driver.

Dr. George M. Lewis: The unusual feature in this case is the apparent involution of the lesion without any treatment. That is unusual in sporotrichosis. One can hardly dispute the clinical diagnosis; the only other that comes to mind is inoculation tuberculosis, and that would hardly fit in with the features in this case.

The organism may be occasionally shown in a stained preparation, but under ordinary conditions of identification it is a difficult procedure. There is usually not much difficulty in demonstrating the fungous culturally.

Dr. Fred Wise: The eruption appears to be a classic example of sporotrichosis of the localized variety.

Dr. Jacob Skeer: This type of sporotrichosis is known as the localized lymphatic type. There are four or five other types. I have a microscopic slide, which does not show any tuberculous structure.

Keratosis of the Penis. Presented by Dr. E. N. Boccanegra-Lopez.

L. M., an American-born white man aged 54, married, came to New York Polyclinic Medical School and Hospital on Feb. 8, 1941, complaining of a keratotic mass on the glans penis, of two years' duration. The patient is employed as a plasterer's helper.

Two years previously the patient noticed a whitish, scaly papule on the right side of the glans. This grew deep and extended laterally to its present size. One year ago it was raised for about 0.5 cm. over the mucous membrane of the glans. On March 15, 1940 he was admitted to the hospital and the whole mass above the surface was cut off, the base and sides thoroughly curetted and electrodesiccated. Eight months later the mass had reproduced itself, filling the cavity with a yellowish, horny substance which was firmly attached to the sides and base of the excavated lesion. Four months later the center of the mass dipped down and was infiltrated with a dark brown material. There has been no pain or discomfort, notwithstanding the fact that the keratotic infiltration has reached the right side of the glans and is around the meatus. The inguinal glands are palpable.

The Wassermann reaction has been repeatedly negative. The urine was essentially normal. A biopsy on Feb. 11, 1941 confirmed the diagnosis.

As no other lesion of this character has been found anywhere on the body, it is supposed that strong chemicals of the alkaline-terreous group have provoked the formation of the keratotic mass on the exposed glans or that the lesion has resulted from handling the penis during urination with soiled hands over a long period.

DISCUSSION

DR. GEORGE C. ANDREWS: The condition in this case impressed me as being epithelioma of a rather highly differentiated type of cell growth. It should be treated as such.

DR. JOSEPH J. ELLER: I think the lesion is an epithelioma and should be treated by amputation of the penis with resection of the glands on each side.

DR. FRED WISE: It is difficult to differentiate the lesion from cancer on clinical grounds. I believe that further microscopic investigation is indicated.

DR. E. N. BOCCANEGRA-LOPEZ: The parallel chains of inguinal glands, especially on the right side, are beginning to be palpable, but they have not been examined histologically. I agree with Dr. Wise's remarks. There has been a tendency of the lesion to spread from the glans toward the coronary sulcus and adjacent preputial tissues and also down into the walls of the urethra. There is evidence that the neoplastic invasion has broken through this structure.

Myelogenous Leukemia; Leukemids; Late Syphilis. Presented by DR. JACOB SKEER.

A. B., a white man aged 63, is presented from the department of dermatology and syphilology of the Brooklyn Jewish Hospital. Except for an attack of "gonorrhea" about thirty years ago, he says he was well until about a year and a half ago, when "double vision" developed. His Wassermann reaction at that time was 4 plus. A few months later a rash developed on the face and then spread over the body and extremities. He went to another institution for treatment of the syphilis and the rash, and a general examination there, together with roentgenograms of the chest, revealed a dilated ascending aorta, a systolic murmur over the entire precordium and a preataxic tabes. The Wassermann reaction of the blood at that time (June 1940) was 4 plus; a Wassermann reaction of the spinal fluid was negative, but the colloidal gold curve was 4321000000. Treatment for syphilis consisted of twenty intramuscular injections of bismuth subsalicylate (total 2.5 Gm.) and ten intravenous injections of mapharsen (total 0.3 Gm.), the last injection having been given about a month ago.

The patient first appeared at the hospital about a month ago complaining of the rash, a feeling of weakness and loss of about 10 pounds (4.5 Kg.) in weight during the last year. A complete physical examination was made at this time, and in addition to the original observations, the enlarged liver was felt 4 finger-breadths below the costal margin, and the spleen could be felt almost down to the crest of the ilium. The inguinal and axillary glands were palpable.

The patient now presents a rash scattered over the face, neck, trunk, upper extremities and thighs. It consists of erythematous, pinhead-sized (on the trunk) to pea-sized or larger (on the face and neck) papules, some conical and others round. Many are follicular and capped with a tiny vesicle, pustule or crust. Some of the lesions are flat and darker red or violaceous, especially on the face. Most of them have no areolas. They are not especially pruritic. The lesions come and go, leaving pigmentation. The lower lip and inner aspect of the cheeks near the corners of the mouth show patches of leukoplakia.

The Wassermann reaction was 4 plus. The urine was normal.

A study of the blood on April 11, 1941 showed the following values: hemoglobin, 77 per cent; red cells, 4,300,000; platelets, 421,000; leukocytes, 100,600; poikilocytosis and polychromasia; myeloblasts, 2 per cent; promyelocytes, 2 per cent; neutrophilic myelocytes, 10 per cent; metamyelocytes, 7 per cent; staff forms, 6 per cent; polymorphonuclear neutrophils, 65 per cent; polymorphonuclear eosinophils, 1 per cent, and lymphocytes, 6 per cent.

Results of Examination of the Bone Marrow

Cells	Peripheral	Biopsy
Neutrophilic myelocytes	5	40
Metamyelocytes	..	10
Staff forms	20	15
Polymorphonuclear neutrophils	68	35
Polymorphonuclear eosinophils	5	
Lymphocytes	2	
Ratios		
Granulocyte : polymorphonuclear	65 : 35	
Granulocyte : erythrocyte	90 : 10	
Erythroblast : normoblast	10 : 90	

The epidermis was corrugated and covered by stratified squamous epithelium with keratinizing superficial layers and short blunt and delicate rete pegs. Hair follicles, sebaceous glands and sweat glands were seen within the corium in places. The papillae were broad and contained distended capillaries and lymphatics and an infiltration of small round cells, large mononuclear cells and polymorphonuclear leukocytes, which was seen particularly about the appendages and in the deeper portions. A few of the infiltrating cells appeared to be young white blood cells. The cellular infiltration was also seen about smaller blood vessels. There was some edema of the interstitial tissue. There was no evidence of leukemic infiltration in this section.

DISCUSSION

DR. CHARLES WOLF: The general appearance of the eruption is not of the type generally seen in myelogenous leukemia; however, that does not vitiate the diagnosis of leukemid. The type of eruption seen in myelogenous leukemia is more of a dusky brownish red, more infiltrated and more raised than in this particular case. There is no glandular involvement, as far as I could ascertain from the superficial examination made. It may be that the patient has myelogenous leukemia, and the eruption may be due to drugs. Potassium iodide was the drug I had in mind.

DR. ABRAHAM WALZER: This patient has had a rash for a year, and he received no iodides whatever. Dr. Wolf has described leukemic infiltration, not the id type of eruption. These lesions are not true leukemic infiltration of the skin but an id associated with leukemia. In true leukemia of the skin the lesions are those of real tumor formation, but in the id type of eruption the rashes may be any one of numerous types, such as vesicles, papules, pustulopapules or vesicopapules. In typical leukemia of the skin one sees dark, dusky, elevated lesions, more or less dome shaped and fixed. They do not disappear. In this particular case the

lesions are evanescent. The patient shows few lesions tonight, compared with a month ago, and one may also see many pigmented areas which are the remains of previous lesions. True leukemia of the skin is not evanescent.

DR. HENRY D. NILES: Some hematologists state that sections of apparently normal skin of patients with myelogenous leukemia show deposits of myeloblasts and myelocytes. One certainly would expect to see hemorrhagic lesions in a case of this long duration. It is unusual that this patient has no hemorrhages from the mucous membranes and has had no epistaxes or bleeding from the gums. I think this eruption would fit in well with the condition known as prurigo lymphatica, which is frequently seen in patients with myelogenous, and especially lymphatic, leukemia. This eruption is so called because it resembles the ordinary prurigo seen on the extensor surfaces of the extremities in children. The patients with this condition, however, are adults, and the lesions occur on the trunk as well as on the extremities. One should always suspect leukemia when one sees prurigo-like lesions on the trunk in adults.

DR. OSCAR L. LEVIN: Clinically the patient shows leukemids. The various lesions which go under that name are well known. If the definition given is to be accepted, I shall have to change my conception regarding the classification of the cutaneous lesions observed in myelogenous leukemia. The lesions on the skin of this patient are clinically leukemids, and if the patient shows microscopic infiltrations of abnormal cells they should not be called leukemids. I believe that he shows not true myelogenous leukemia of the skin but characteristic leukemids.

Persistent Swelling of the Fingers of One Hand Following Butesin Picrate Dermatitis. Presented by DR. JESSE A. TOLMACH.

C. S., a Puerto Rican aged 52, from the Skin and Cancer Unit of the New York Post-Graduate Medical School and Hospital, suffered a second degree burn of the right hand from contact with hot grease on Dec. 26, 1940. Butesin picrate was applied to the burn. About four weeks later the patient complained of swelling of the entire right arm, and at that time the skin of the arm was seen to be bright red and covered with vesicles and bullae. The rest of the body showed a generalized erythematous and scalp eruption.

Under soothing applications the entire eruption subsided about two months ago. At that time a bullous eruption appeared on the right hand, accompanied by swelling of the hand and of the fingers. The vesicles and bullae and the swelling of the hand have disappeared, but the swelling of four fingers still persists.

The Wassermann reaction of the blood was negative, and the urine was normal.

DISCUSSION

DR. E. WILLIAM ABRAMOWITZ: It is not unusual to have dermatitis develop after the use of butesin picrate, and the so-called flare-up reaction may appear later without further contact with the exciting cause. I think the man has a beginning acrosclerosis. The skin is sclerodermatous and the nails show trophic changes. The man's peripheral vascular system should be investigated.

DR. A. BENSON CANNON: Why could not the condition be explained by lymphangitis? It is not unusual to see a chronic lymphangitis following an infection, and sometimes it is permanent. I have such a case, in which the condition followed an infected vaccination wound; there is a hard lymphedema of the entire right arm that has remained unchanged for some twenty years.

Parapsoriasis en Plaques; Beginning Mycosis Fungoides. Presented by DR. JACOB SKEER.

D. M., a married man aged 45, came to the dermatologic clinic of the Israel Zion Hospital in June 1940, complaining of an itching eruption of four years' duration.

Examination reveals numerous lesions of various sizes and shapes in the form of pink to deep red slightly infiltrated paques situated on the chest, abdomen, back, arms, legs and thighs. Some of the plaques appear to be receding, leaving a sharply outlined pinkish white, erythematous area which is pigmented. The other plaques have deep red, firm nodules and papules. The patient states that the itching seems to subside at times and the eruption to recede.

The Wassermann reaction of the blood was negative. The leukocyte count was 6,500, with polymorphonuclear leukocytes 53 per cent, mononuclear leukocytes 4 per cent, lymphocytes 3 per cent, basophils 3 per cent and eosinophils 3 per cent.

Histologic examination by Dr. Henshel, of the Skin and Cancer Unit of the New York Post-Graduate Medical School and Hospital, showed the epidermis to be slightly acanthotic, with the granular layer decreased. Spongiosis and exocytosis were noted. In many areas the basal cell layer was disorganized. In the upper part of the cutis was observed a somewhat bandlike infiltrate consisting of round cells and histiocytes of various sizes and shapes. This picture would fit in with early mycosis fungoides.

DISCUSSION

DR. CHARLES WOLF: The patient has one disease, and there is no necessity of giving the disease a supernumerary name. Parapsoriasis is an entity in itself, and either he has it or he does not have it. This rash is mycosis fungoides in the premycotic stage.

DR. E. WILLIAM ABRAMOWITZ: I have seen this patient several times, and the condition was a typical example of what is called parapsoriasis en plaques. There was a discussion as to the possibility of mycosis fungoides, but the first histologic study did not support that diagnosis. The infiltrated lesions he has now are a new feature, so he apparently had what one would call parapsoriasis en plaques and now has mycosis fungoides.

DR. JACOB SKEER: I do not understand what Dr. Wolf meant by saying, once mycosis fungoides, always mycosis fungoides and then remarking that this condition is in a premycotic stage. I am of the opinion that Dr. Harry Keil (ARCH. DERMAT. & SYPH. **38**:545 [Oct.] 1938) is probably on the right track when he says that in most cases of parapsoriasis, especially the en plaques and variegata varieties and the retiform type with its transition into poikiloderma, the condition is a premycotic eruption of mycosis fungoides. He did make an exception with the pityriasis lichenoides type and with Haberman's varioliformis type. I think this case tends to prove that his conclusions are correct.

Monilethrix; Koilonychia. Presented by DR. GEORGE M. LEWIS.

G. G., a girl aged 16, was presented before the Manhattan Dermatologic Society in March 1941 (ARCH. DERMAT. & SYPH., to be published).

DISCUSSION

DR. GEORGE M. LEWIS: This case is the only one I have encountered in which monilethrix and koilonychia occurred in the same patient, and, as both diseases are rare, I have wondered if some relation exists between them. So far I have not been able to obtain any favorable results from the standard treatments mentioned in the textbooks or from the use of vitamin preparations. Suggestions for therapy would be appreciated.

DR. LOUIS TULIPAN: I think one should go a little further than just to name the conditions seen in this case. One must consider the possibility of a Plummer-Vinson syndrome. The girl shows koilonychia with keratosis pilaris on the back of the neck; if she shows microcytic anemia, it could be considered that she has a possible Plummer-Vinson syndrome, even though she has no burning of the tongue or dysphagia. Most patients with the Plummer-Vinson syndrome have koilonychia with other associated symptoms. According to that, this condition may have an

underlying vitamin deficiency, and I believe if she were to be treated from that viewpoint some good results might be obtained. I suggest that a differential blood count be made.

DR. DAVID BLOOM: I learned from the patient that several members of the family had the same changes in the nails but no changes in the hair. I believe, therefore, that both the monilethrix and the koilonychia in this patient are hereditarily transmitted and have some relation to each other.

DR. FRED WISE: It is possible that koilonychia and the other symptoms are part of the same syndrome. It has been said that koilonychia is associated with achylia gastrica. Investigation of the gastrointestinal tract seems to be indicated.

DR. LOUIS TULIPAN: Dr. Wise reminded me that achylia gastrica is another symptom that goes with the Plummer-Vinson syndrome, and therefore examination of the gastric contents would be indicated.

DR. GEORGE M. LEWIS: There is a positive family history. The father and one other member of the family have koilonychia. A complete blood examination in this case did not reveal any abnormalities.

Cold Urticaria. Presented by DR. ABRAHAM WALZER.

J. S., a man aged 22, is presented from the department of dermatology and syphilology of the Brooklyn Jewish Hospital. There is no personal or family history of asthma, hay fever or any other allergic disease in the patient or in his family.

The present trouble began about four years ago at the onset of cold weather. He noted that any part of his body that was exposed to cold became itchy and red and that soon wheals developed.

An investigation from the allergic standpoint was instituted. Intracutaneous tests for all foods and inhalants revealed nothing abnormal. The immersion of his hands in cold water or the application of an ice cube was followed by erythema and wheals limited to the area of contact. The mucous membranes were not affected by cold drinks. It was found that a temperature of 77 F. (25 C.) was the highest that would induce the wheal reaction.

This reaction is demonstrated at this presentation. An ice cube applied to the forearm and left in contact for one and one-half minutes has induced a pronounced wheal with surrounding erythema, which became visible five minutes after the application.

The treatment at first consisted of intramuscular injections of histamine phosphate, beginning with 0.0001 Gm. and gradually increasing to 0.05 Gm. over a number of months, without any effect. Immersions in cold water of a few minutes' duration were then instituted, the temperature of the water being gradually lowered to 77 F. and kept at that temperature for a number of minutes. The production of wheals at this temperature finally stopped in about three months, but it will still occur at a lower temperature than this in spite of all further treatment by immersion.

DISCUSSION

DR. E. WILLIAM ABRAMOWITZ: Has histaminase been used?

DR. ABRAHAM WALZER: Histaminase theoretically should be of value, but it has proved to be of no use. It has been shown that it is destroyed in the stomach. It has not been tried in this case but has brought about no results in others.

DR. GEORGE M. LEWIS: At the New York Hospital histaminase was tried in a case of cold urticaria, with negative results.

A Case for Diagnosis. Presented by DR. L. S. VAN DYCK.

G. T., a woman aged 41, from the Skin and Cancer Unit of the New York Post-Graduate Medical School and Hospital, has suffered from a recurrent eruption of the face for the past eleven years.

Eleven years ago there first occurred an acute, wheal-like swelling around the nose, eyes and forehead. The outbreak subsided, but there were several recurrences during the same year. In 1930 the patient attended the Skin and Cancer Unit, where the condition was diagnosed as lupus erythematosus. In 1931 she went to the Vanderbilt Clinic, where a diagnosis of chronic recurrent erysipelas was made. A culture was made from the skin during an attack, and hemolytic streptococci were obtained. An attempt was made to desensitize the patient with autogenous vaccine and staphylococcus toxoid. Reactions to other tests were negative, with the exception of a slight cutaneous reaction to streptococcus toxin and to nicotine.

The eruption is not seasonal; attacks occur frequently after parties, especially in overheated or tobacco smoke–filled rooms. In the acute stage the patient presents an inflammatory edematous swelling which gradually assumes a purplish hue. The eruption is fairly well defined and during one attack extended over the forehead, nose and right cheek. The eyelid is not included. The right ala of the nose at that time showed a fissure which extended into the mucous membrane of the nose and left cheek. Even during the intervals between attacks the nose never lost its edematous appearance, but it did lose the discoloration. The slightly indurated, tapioca-like eruptions on the nose always remained.

Histologic examination in 1930 revealed a thin epidermis with rete pegs only at the follicle openings. There were a moderate amount of edema around the blood vessels and a slight cellular infiltration. In one area were pale-staining cells suggesting a lipoid infiltration.

The patient has received various types of treatment: roentgen rays, sun rays, bismuth, injections of whole blood, vitamins, vaccine and removal of teeth.

DISCUSSION

DR. LOUIS TULIPAN: I believe the case is one of lymphedema due to infections in the nose, with recurrent erysipelatous attacks. It is a common picture; she has fissures in the nares, and if she were treated with one of the antiseptic dyes painted into the nares daily, I think the attacks would stop.

DR. MAX SCHEER: In my opinion, after eleven years of recurring attacks of erysipelas-like lesions on the face, the patient would have had a good deal more persistent edema than she has. The lesions impressed me as being the superficial telangiectatic type of lupus erythematosus, a type which frequently may last for many years and which may not leave atrophy.

DR. FRED WISE: I believe the diagnosis of erysipeloid of Rosenbach should be considered.

DR. OSCAR L. LEVIN: I agree with Dr. Scheer that the patient is suffering from a chronic type of lupus erythematosus. The erysipeloid type of lupus erythematosus is well known; it lasts for many years, and there are acute attacks. The general picture of the condition and the history the patient gives of having had a positive streptococcus culture make me think she will ultimately succumb to lupus erythematosus of the acute type.

DR. W. A. CASPER (by invitation): The absence of certain features is against the diagnosis of lupus erythematosus. Such features are telangiectasia, atrophy and scaling, which one would expect to find after a duration of eleven years. The histologic structure is also not characteristic. The chronic erysipelas which has been suggested would not leave those persistent nodular eruptions after the edema and purplish color subsided. Sulfanilamide and sulfathiazole (2-[paraaminobenzene-sulfonamido]-thiazole), which are usually beneficial to erysipelas, did not influence the eruption. Drug eruption and simple chronic edema can be excluded, as they would not last for eleven years. Various dyes, including gentian violet and silver nitrate, had no effect. The blood count did not show a leukopenia. Repeated aerobic and anaerobic cultures showed staphylococci and nonhemolytic streptococci and were negative for Bacillus Rosenbach.

Perhaps the whole process, with the persistent tapioca-like nodules, could be looked on as lipoid degeneration; in the histologic report of 1930 there were seen "in one area pale-staining cells suggesting a lipoid infiltration."

A Case for Diagnosis (Ulcerative Serpiginous Syphilid?). Presented by Dr. David Bloom.

A. B., a Negress aged 63, came to the dermatologic clinic of Sydenham Hospital complaining of ulcerations on the left leg of one month's duration.

The patient was well until four years ago, when an ulcer developed on the left thigh, for which she was confined to Harlem Hospital for four months. A year later a similar ulcer developed on the left leg, and this also healed after some months.

On the outer side of the left leg are seen pea-sized and larger elongated ulcerations arranged in a serpiginous configuration. On the outer and anterior aspects of the left thigh, involving almost the upper half, there is a smooth depigmented scar with a serpiginous outline. A similar scar is seen on the outer aspect of the left leg. Both lower extremities show large lipomatous thickenings which are not tender. These have been present for the past ten years.

The patient states that she has never had a syphilitic infection or any antisyphilitic therapy. She had two children, one of which died at the age of 20 months of unknown cause.

She has had several blood tests, all of which gave negative results. A recent serologic examination showed negative Kahn, Kline and Wassermann reactions.

The patient has recently received three injections of a bismuth compound, which have improved her condition.

DISCUSSION

Dr. Charles Wolf: This extensive scarring of a serpiginous character is commonly suggestive of syphilis, but the interesting feature is the elephantiasis. One has to consider whether syphilis would produce a syphilitic lymphangitis of such a degree or whether the conditions is a lymphogranuloma. I therefore suggest that the patient be given a Frei test.

Dr. Fred Wise: I do not think the condition is a syphilitic manifestation. The outlines of the lesion resemble those of a serpiginous syphilid, but the scarring certainly does not. There is a cigaret-paper-like, wrinkled appearance in some areas; the color is much lighter than that of the scars of syphilis, and there are various other features which do not conform to healed syphilis.

Dr. A. Benson Cannon: I am in favor of a diagnosis of tuberculosis rather than syphilis, for the reasons enumerated by Dr. Wise. I realize the difficulty one has in differentiating between serpiginous syphilitic ulcerations and tuberculosis clinically, and for that reason I advocate guinea pig inoculations of tissue removed from one of the active lesions.

Dr. David Bloom: The large masses on the patient's left leg are deposits of fat and not elephantiasic hypertrophy. The absence of lesions in the scars, the comparatively short time during which the lesions healed and the type of scar speak for syphilis rather than for tuberculosis. The response to antisyphilitic therapy will be of help in deciding the diagnosis.

Erythema Exudativum Multiforme of Hebra (Recurrent). Presented by Dr. Jesse A. Tolmach.

R. S., a white girl aged 16, born in the United States, has been under observation at Beth Israel Hospital since 1937, when her present eruption first developed. She has had six recurrences since her first admission to the clinic.

The eruption appears seasonally, in the spring and fall, and as a rule involves the palms and wrists and occasionally the lips and buccal mucosa. It lasts three

or four weeks, during which time several crops of lesions appear, presenting various stages of the eruption. Medication, as with salicylates or sulfanilamide, has not influenced the duration or intensity of the eruption. Prodromal symptoms, such as pain in the joints, headache or fever, are sometimes present.

A general examination reveals a pale, obese girl of medium height. She has always been well, with the exception of having frequent sore throats and carious teeth. A tonsillectomy was performed in 1938. She has been menstruating since the age of 14. There is no history of drug ingestion She occasionally takes magnesium sulfate as a laxative.

The thenar eminence of each palm, as well as the first interdigital space, presents bright red, well defined, rounded edematous patches, which spread peripherally and form polycyclic figures. The border is of the vesicobullous type, while the center shows clearing with a yellowish to bluish red discoloration.

The basal metabolic rate was plus 8 per cent. A blood count showed 4,140,000 red and 14,000 white cells, with polymorphonuclear leukocytes 60 per cent, lymphocytes 27 per cent, monocytes 4 per cent, eosinophils 5 per cent and staff cells 4 per cent. The hemoglobin content was 88 per cent. Numerous stippled cells were seen in the blood in 1940, but none has been seen since. A roentgen ray examination of the chest showed no evidence of tuberculosis. The reaction to a Mantoux test was positive in a dilution of 1 : 10,000.

DISCUSSION

DR. E. WILLIAM ABRAMOWITZ: This condition is not a characteristic Hebra type of erythema multiforme. It is an erythema multiforme of the inverse type. If the eruption recurs in the previously affected area, it is a fixed eruption. The possibility of drugs as a cause should be investigated further.

DR. JESSE A. TOLMACH: It is my understanding that lesions of erythema exudativum multiforme recidivans Hebrae may appear on the palmar surfaces. In this case there has been a seasonal occurrence, the lesions appearing in the spring and fall since 1937. There is no history of drug ingestion. A few test doses of phenolphthalein did not cause an exacerbation.

Dermatophytosis (Trichophyton Purpureum). Presented by DR. GEORGE M. LEWIS.

H. S., a white man aged 46, is presented for Dr. Margaret Klumpp from the New York Hospital with cutaneous lesions of ten years' duration. Lesions developed first on the palms ten years ago and then on the legs. Pruritus is bothersome. The palms are thickened and hyperkeratotic, with fissures corresponding to the natural lines of the hands. There is a verrucous, horny, thickened patch on each leg, oval and approximately the size of a silver dollar. These have horny plugs and are slightly elevated. The soles are slightly thickened. The toe nails are all thickened, yellow and irregular. There is some scaling between the toes.

Histologic examination revealed a papillary growth covered with stratified squamous epithelium. There were extreme hyperkeratosis and moderate acanthosis. The rete pegs were somewhat irregular but did not indicate malignant change. The fibrous stroma was vascular and showed considerable lymphocytic infiltration.

Laboratory examinations had the following results: Wassermann reaction, negative; roentgenogram of the chest, normal; roentgenogram of the gastrointestinal tract, normal; examination of the stool, negative for ova and parasites; blood, normal, and urine, normal (no arsenic found). Culture of material from the hands, feet and toe nails showed T. purpureum. Tests of material from the lesions on the legs showed no fungi. Trichophytin and oidiomycin intradermal tests elicited the following reactions: negative in fifteen minutes, 2 plus in forty-eight hours and 2 plus in one week.

The patient has been given weekly roentgen ray treatments—eleven unfiltered ¼ erythema doses—with very little improvement. The application of compound ointment of benzoic acid N. F. over a long period has caused slight improvement. He has also been on a high vitamin diet reenforced by the administration of wheat germ, yeast and mixed vitamins.

DISCUSSION

DR. CHARLES WOLF: I believe the lesions on the legs are not tinea but hypertrophic lichen planus. This manifestation of lichen planus is very resistant to treatment.

DR. ROYAL M. MONTGOMERY: I think the lesions in this case are good examples of the various types of lesions caused by T. purpureum. In the last few years more and more unusual clinical manifestations have been seen or reported. Dr. Tolmach reported a case of dermatitis herpetiformis (ARCH. DERMAT. & SYPH. **41**:732 [April] 1940), and I have encountered cases of a condition simulating neurodermatitis, from the lesions of which T. purpureum was isolated.

Lichen Planus Obtusus. Presented by DR. ABRAHAM WALZER.

E. St. H., a Negress aged 13, is presented from the department of dermatology and syphilology of the Brooklyn Jewish Hospital. She was the fourth of eight children, and outside of the statement that she had had a "rash" for a number of years which lasted a "long" time, there was nothing in her history of any importance.

Her present eruption appeared about two years ago on the face and spread rapidly to the ears, neck and extremities and sparingly on the trunk. The elementary lesions are pinhead-sized raised conical or angular follicular papules, many of which are capped with tiny central crusts. They increase in size to that of a millet seed or a trifle larger, are pronouncedly elevated, angular or round and are surmounted by a somewhat adherent dry hard crust which on removal leaves an oozing surface (fresh lesion) or a dry, flat, shiny surface (older lesion). These flat papules become flatter, eventually disappearing without any scar or atrophy but leaving a dark, brown-black pigmented spot.

Various areas of the body show a preponderance of certain types of lesions. The face shows mostly both types of the small papular lesions, disseminated and strongly resembling lichen planus. The extremities, on the other hand, show a great preponderance of the thickly crusted, larger papules. Intermingling with these are many of the tiny papules. The backs of the hands and some of the fingers show disseminated, larger, raised, flat and conical papules, many of them without the crusts, and in some instances they give the appearance of papulonecrotic tuberculid papules. On the palms the lesions are deep seated and scanty and simulate those of lichen planus. There are no lesions on the scalp, mucous membranes or nails.

A complete physical examination, including examination of the eyes, revealed no abnormalities.

Repeated blood counts and results of tests of the urine were within normal limits. The Wassermann reaction of the blood was negative. The result of an intracutaneous tuberculin test was normal.

Microscopic examination of a small flat lesion showed a moderate hyperkeratosis and localized areas of parakeratosis. The granular layer was thin. There was pronounced acanthosis of the prickle cell layer. Scattered through this layer were localized areas of dyskeratosis, as indicated by large balloon-shaped cells containing large nuclei with two or three nucleoli. There was a decided cellular infiltration limited to the upper layer of the corium, merging in some areas imperceptibly with the acanthotic epidermis. The cellular infiltration was mainly lymphocytic, with an occasional histiocyte. There was great edema of the reticular layer of the corium, which also showed numerous pigment-laden macrophages. The collagen bundles of the deeper portions of the cutis were swollen and homogeneous.

SAN FRANCISCO DERMATOLOGICAL SOCIETY

O. P. DIEDERICH, M.D., *Acting Chairman*

ERVIN EPSTEIN, M.D., *Secretary-Treasurer*

April 18, 1941

A Case for Diagnosis (Leprosy? Sarcoid?). Presented by DR. N. N. EPSTEIN.

K. T., a Chinese man aged 53, reported to the University of California dermatologic clinic on April 15, 1941, with a well defined dark red plaque of five months' duration on the left cheek. He had been examined at the University of Chicago early in 1941. Wassermann and Kahn tests of the blood there had given negative results. Histologic changes observed in two successive biopsies had not been considered diagnostic.

Examination reveals a dusky red plaque, measuring 5 by 10 cm., with a well defined, slightly irregular, sharply raised border. The lesion covers most of the left cheek. Inferior to this, situated on the neck, is another plaque, measuring 3 by 3 cm. A cordlike mass extends from the lower border of the larger plaque down the neck to a point just above the clavicle. Sensations of touch and pain are slightly diminished within the plaques.

DISCUSSION

DR. HARRY E. ALDERSON: I do not think that clinically the condition bears much resemblance to leprosy. It is unusual in leprosy to see only one lesion, especially in this locality. I think that because a patient is an Oriental one is inclined to diagnose leprosy without adequate evidence. The lesion looks definitely like sarcoid to me. I found no sensory disturbances.

DR. A. E. INGELS: I saw this man in my office. Clinically, I do not think that one can definitely differentiate the two conditions in this case. I have encountered cases of leprosy in Hawaii in which one could not make a differentiation. In this patient the right ulnar nerve is thickened and painful. This is a sign that is often misinterpreted. If one squeezes long enough, hard enough and often enough, as has been done at this meeting, one can produce tenderness in any ulnar nerve. The histologic aspects correspond to sarcoid. However, it requires many stainings for acid-fast bacilli to make sure that none are present.

DR. H. J. TEMPLETON, Oakland, Calif.: The diagnosis rests between sarcoid and the sarcoid type of leprosy. Some of the cases which I observed at the National Leprosarium (Carville, La.) last week closely resembled this one. The final diagnosis depends on finding lepra bacilli.

DR. HARRY E. ALDERSON: I have been in Honolulu, Hawaii, many times during the past thirty years. There, and also at Carville, La., I saw many lepers. Occasionally, they presented involvement of the nerves of the neck manifested by fusiform enlargement. That sign would influence me as to the diagnosis. The fact that there are no anesthetic areas must be considered. Of course, there is nothing to prevent a patient from having two or three diseases involving the skin at the same time. I should like to see stained smears of material from that enlarged nerve.

DR. N. N. EPSTEIN: I should say that the probable diagnosis is leprosy. The lesion is undoubtedly a granuloma. It has the color and the infiltration of the plaquelike type of leprosy. If this condition is sarcoid, what is the significance of the cordlike lesion that extends over the occipital nerve? It is about the size of my little finger. When one presses on it, the patient complains of referred pain in the pinna of the ear. Sarcoid is simply a histologic diagnosis. I think that there should be further biopsies, including one of tissue from the cordlike lesion.

Leukaemia Cutis. Presented by Dr. N. N. Epstein.

Mrs. C. McK., a 65 year old white woman, noted the onset of a pruritic eruption five years ago. At that time the skin of the arms, face and neck became reddened, scaly and thickened. The condition gradually spread to involve the entire body. At first the eruption tended to be intermittent, but for the past year and one-half it has not varied. Itching is intense. The mucous membranes of her mouth are unaffected.

The patient presents a generalized erythroderma with thickening of the skin. Excoriations are also present. A moderate general adenopathy is noted, this being most evident in the groins. Her spleen is not palpable.

A blood count performed on Jan. 2, 1941 showed 4,650,000 red cells and 69,450 white cells, with 90 per cent lymphocytes, 1 per cent monocytes and 9 per cent polymorphonuclear leukocytes.

The patient received several roentgen ray treatments to the skin with some improvement.

A blood count performed one week ago showed 26,500 white cells, with 66 per cent lymphocytes.

A histologic section of a cutaneous lesion was interpreted by Dr. G. Y. Rusk as leukaemia cutis.

DISCUSSION

Dr. Merlin Maynard, San Jose, Calif.: I think the diagnosis is established.

Dr. Ervin Epstein, Oakland, Calif.: I should classify this condition as a leukemid rather than a true leukaemia cutis. With 90 per cent lymphocytes in the blood stream, one should not be surprised at finding leukemia cells in the skin.

Dr. N. N. Epstein: The histologic section shows under the microscope what Dr. Rusk termed leukemic cells. In chronic lymphatic leukemia one does not always find enlargement of the spleen. I believe this condition should be classified as a true leukemia of the skin rather than as a leukemid.

Pruritus. Presented by Dr. R. A. Stewart.

C. D., a white man aged 65, entered the University of California surgical service on Jan. 30, 1941. A diagnosis of ulcer of the prepyloric area of the stomach with partial obstruction was made. A gastric resection was performed early in February and was followed by two laparotomies for correction of nonfunctioning stoma and for drainage of a left subhepatic abscess.

Since the first operation the patient has had continuous pruritus. Treatment has failed to relieve the itching except for brief periods following intravenous injections of calcium levulinate. The treatment has included antipruritic lotions applied topically, soda baths, phenobarbital and acetylsalicylic acid, calcium levulinate, epinephrine sublingually and ergotamine tartrate.

Examination reveals only excoriations. There is a suggestion of an icteric tint. The icterus index was 33 on March 7 and 34 on March 8. The total protein content of the blood serum on March 14 was 5.28 Gm. per hundred cubic centimeters, the albumin being 2.41 Gm., the globulin 2.87 Gm. and the albumin-globulin ratio being 0.84. On April 1 the total protein was 5.69 Gm. per hundred cubic centimeters. Examination of the blood on April 15 showed a hemoglobin content of 82 per cent, a red cell count of 3,500,000 and a white cell count of 12,000, with polymorphonuclear leukocytes 66 per cent and lymphocytes 34 per cent.

DISCUSSION

Dr. R. A. Stewart: The reason for presenting this case was to get ideas for therapy. The patient has been miserable because of his pruritus. Nothing has done him any good.

Dr. G. V. Kulchar: I should like to know the cause of his jaundice.

Dr. Harry E. Alderson: I presume that this case is one of pruritus associated with a malignant condition in the abdomen. I think one can treat him symptomatically only. Have you tried half-doses of amytal every five hours?

DR. C. J. LUNSFORD: My associates and I have used ergotamine tartrate at Cowell Memorial Hospital with success in some cases of intractable itching.

A Case for Diagnosis (Lupus Erythematosus?). Presented by DR. FRANCES A. TORREY.

M. W., a white housewife aged 76, was seen at the University of California dermatologic clinic on March 31, 1941 because of a symmetrically distributed pruritic erythematous eruption on the dorsa of the hands and forearms and on the face, scalp and chest. The lesions had been present for four months.

The patient was hospitalized from April 1 to 4. Physical examination showed changes compatible with her age. The results of laboratory examinations were essentially negative. The urine was normal. The phenolsulfonphthalein clearance test showed 72 per cent in two hours. Examination of the blood showed a hemoglobin content of 104 per cent, a red cell count of 4,750,000 and a white cell count of 7,000, with 57 per cent polymorphonuclear leukocytes (41 per cent filamented and 16 per cent nonfilamented), 19 per cent eosinophils, 3 per cent basophils, 16 per cent lymphocytes and 5 per cent monocytes. Uroporphyrin was absent. A roentgenogram of her chest revealed no abnormalities. Intradermal tuberculin tests gave negative results with dilutions of 1:10,000 and 1:100,000.

The cutaneous lesions started with redness and dilatation of the veins at the base of the finger nails. In a few days pruritic erythematous maculopapules appeared on the dorsa of the hands and arms. During the last month there has been a diffuse, pruritic, erythematous and scaling eruption on the shoulders and in a butterfly distribution on the nose, chin and scalp. A histologic section of the lesion on the arm is presented.

Treatment included two capsules of vitamin B complex taken orally per day.

DISCUSSION

DR. O. P. DIEDERICH, Fresno, Calif.: My impression is that this condition is acute lupus erythematosus.

DR. A. E. INGELS: The histologic picture is compatible with the diagnosis of lupus erythematosus.

DR. F. H. STIBBENS, Oakland, Calif.: I think this condition is lupus erythematosus.

DR. C. J. LUNSFORD, Oakland, Calif.: I think it is unusual that a patient with this much involvement should not be more ill than this one is.

DR. MERLIN MAYNARD, San Jose, Calif.: Extensive examples of a congestive eruption are sometimes seen which lie between solar damage to the skin and lupus erythematosus. I think it is a mistake to call such conditions lupus erythematosus because the patients are not very sick. There is no scaling, and aside from a little fine reticulation there is no atrophy. I think that such a lesion should be called a toxicoderma of the lupus erythematosus type.

DR. H. J. TEMPLETON, Oakland, Calif: I agree with Dr. Maynard. I should call the condition solar dermatitis. I recall an article recommending the use of estrogenic substances for this type of dermatitis and suggest that such treatment be tried.

DR. STUART C. WAY: The patient gave me the impression that the lesions would develop into an exfoliative type of dermatitis.

DR. MERLIN MAYNARD, San Jose, Calif.: I wonder if nicotinic acid therapy should be tried. It is sometimes used for lupus erythematosus.

A Case for Diagnosis (Parapsoriasis en Plaques?). Presented by DR. JOHN M. GRAVES.

A. U., a white man aged 49, reported to the dermatologic clinic of the University of California Hospital on March 13, 1941. He presented a moderately pruritic generalized dermatitis of four weeks' duration.

Physical examination revealed no abnormalities. He gave a history of having taken compound pills of mild mercurous chloride N. F. frequently, but he had received no other medication. The blood and urine were normal.

The eruption consists of symmetrically distributed, brownish, finely scaling macules of uniform size, each about 0.5 cm. in diameter. Microscopic examinations of scales for mycelial elements have repeatedly given negative results.

A histologic section from a lesion on the back is presented.

DISCUSSION

DR. STUART C. WAY: This patient purchased new underwear two months prior to the development of this cutaneous condition. A recent patient when given patch tests gave a strongly positive reaction to garments that had been laundered five different times. I should therefore like to suggest that similar tests be carried out in this case, although the time interval is unusually long.

DR. FRANCES A. TORREY: The patient had practically no pruritus, which would be expected in a contact dermatitis.

DR. O. P. DIEDERICH, Fresno, Calif.: I have found this type of condition very difficult to diagnose because it is hard to discover the cause.

DR. STUART C. WAY: Another condition to be considered is Brocq's erythrodermie pityriasique en plaques disseminées.

DR. JOHN FANNING, Sacramento, Calif.: I raise the question whether this condition might be a premycotic stage of mycosis fungoides.

DR. G. V. KULCHAR: I think the dermatitis is the plaque type of parapsoriasis. Clinically it does not seem to be an eczematoid lesion.

DR. ERVIN EPSTEIN, Oakland, Calif.: I agree with the diagnosis of parapsoriasis en plaques. The lesions are macular and tend to follow the lines of cleavage of the body, and the location is typical. Dermatitis venenata due to dyes or finishes in clothes is usually papular and most noticeable in the areas in which the garment is tightest and perspiration is greatest.

Sarcoma (Treated). Presented by DR. ERVIN EPSTEIN, Oakland, Calif.

O. M. B., a 57 year old white man, was first seen on Nov. 29, 1940, because of a large lesion on his left shoulder of six or eight months' duration. This slowly enlarged until it had attained the size of a large orange. It had always felt firm, but on November 28 it suddenly broke open and discharged a great deal of blood.

On examination the nodule was tender and still bleeding. Some of the areas were hard, but others seemed fluctuant. The overlying skin was bluish red. The center was ulcerated and filled with a granulomatous necrotic mass. The lesion was definitely in the soft tissue, being freely movable over the underlying bones.

The Wassermann and Kahn reactions were negative, and there was no history of a syphilitic infection.

The entire lesion was removed with an actual cautery under procaine hydrochloride anesthesia on December 1. The tumor was found to consist of necrotic material. The excised mass measured 3 by 3 inches (8 by 8 cm.). The underlying muscles were exposed and completely cleaned. The lesion healed without skin grafting. He also received a total of 7,500 r of unfiltered roentgen rays postoperatively.

At this time the patient presents a smooth pliable scar with little limitation of motion.

The histologic section showed a large number of cells with plump nuclei and numerous mitotic figures. The section also contained a large number of irregular giant cells with multiple nuclei. The nuclei were irregularly placed but showed

a definite tendency toward central clumping. There was also some necrotic material, and while the giant cells were scattered throughout the section, they seemed to be thickest around the necrotic masses. On the basis of this section, a diagnosis of sarcoma of a highly malignant type was made by Dr. G. Y. Rusk.

The patient has been doing well in general since the operation. There is nothing in the history suggesting pulmonary metastases. Supraclavicular, cervical, axillary and epitrochlear lymph nodes are not palpable. During the past two weeks some pain has developed in the area of his left shoulder, and intermittent numbness and pain have developed in the area supplied by the left ulnar nerve.

DISCUSSION

DR. H. J. TEMPLETON, Oakland, Calif.: I have little comment to make except to compliment Dr. Epstein on his excellent result. I have always felt strongly that malignant lesions of the skin should be removed by a destructive measure, such as electrodesiccation, electrocoagulation or the actual cautery.

DR. ERVIN EPSTEIN, Oakland, Calif.: I presented this case for various reasons. The histologic picture is unusual. There are a great many large giant cells. As yet, there is no evidence of metastases. As to the use of the actual cautery, in Eller's book (Eller, J. J.: Tumors of the Skin, Philadelphia, Lea & Febiger, 1939) in the portion in which different types of treatment are discussed its use is not even mentioned. However, I doubt if any other method of treatment would have removed this lesion and given as good a cosmetic effect without the use of a skin graft.

A Case for Diagnosis (Nevi? Porokeratosis? Granuloma Annulare?). Presented by DR. H. J. TEMPLETON, Oakland, Calif.

J. H., a white boy aged 12 years, was referred by Dr. L. Abbott Hedges, of Richmond, Calif., because of sharply marginated lesions, 1 cm. in diameter, of eight or nine months' duration, located anterior to each ear.

The lesions are sharply marginated, slightly scaly, reddish brown plaques. The periphery of one of them shows a ring of tiny follicular keratotic elevations. Scrapings were negative for fungi. One treatment of 150 r of unfiltered roentgen rays and one freezing with liquid air produced little benefit.

DISCUSSION

DR. HARRY E. ALDERSON: At first glance, this condition suggests granuloma annulare. However, I have encountered many cases of granuloma annulare but none in which there were lesions on the face.

DR. C. J. LUNSFORD, Oakland, Calif.: When I first saw the lesion, I thought it was one of cutaneous tuberculosis.

DR. A. E. INGELS: The only diagnosis I could suggest in connection with the symmetry is lupus erythematosus. You say that the lesion was inflamed at one time? Might it possibly be an area of lupus erythematosus that now has healed?

Tuberous Sclerosis. Presented by DR. ARNE ELY INGELS.

J. W., a 10 year old white boy, has a mental age of 9 months. His first tooth developed at the age of 11 months, and he walked at 17 months. He has never talked.

The patient experienced his first convulsive seizure at the age of 9 months and the next at 19 months. Subsequent attacks, diagnosed as tetany, occurred with increasing frequency until at present he has spells almost every night. During these attacks he is said to become rigid but does not lose consciousness.

The cutaneous lesions started developing "some years ago." The vitiliginous areas first appeared "some months ago."

The patient is poorly developed, fairly well nourished and uncooperative. A general physical examination revealed no other abnormalities. He presents a brownish fibrotic plaque on each temple. Scattered over his forehead and symmetrically over his nose, cheek and chin are bright reddish lesions. Many pigmented moles are also present. There are no café au lait spots. There are also vitiliginous areas following the lines of cleavage of the body.

The results of routine laboratory studies, including a blood count, serologic examination, urinalysis and examination of the spinal fluid, were within normal limits. Encephalograms revealed the presence of two calcified areas within the brain near the midline. No other abnormalities were noted.

A biopsy of a lesion on the chin showed no hyperkeratosis of the epithelial layer. In general the epithelium was thin. There was an occasional indication of acanthosis. In most places strands of epithelium dived into the cutis in connection with hair follicles as well as independently. These strands contained cysts of all sizes. Occasional bundles of apparent nerve fibers were also seen. However, studies with Bielschowsky's stain have not been completed. The number of sebaceous glands present did not exceed the normal amount for this part of the face. Sweat glands, present in normal number, showed dilated lumens. Further study will be necessary to establish a relation between these and the surface epithelium. The connective tissue seemed to be normal.

DISCUSSION

DR. H. J. TEMPLETON, Oakland, Calif.: Were there any periungual, subungual or gingival tumors?

DR. A. E. INGELS: No.

DR. STUART C. WAY: The condition in this case appears to be a typical example of this disease.

DR. A. E. INGELS: I think that this case is remarkable for two reasons: First, this patient has the lowest intelligence quotient that I have ever encountered; second, the depigmented areas found on the trunk following the distribution of nerves point to involvement of the central nervous system, possibly to tumor masses in the cord. The occurrence of calcified areas in the brain has been demonstrated clearly in the roentgenograms. One atypical feature in this case is that there are no changes in the fundi of the eyes. The histologic changes of the cutaneous lesion is extremely interesting because dermatologists have their own opinion of the origin of these lesions. I feel that this case points out a relation between this disease and von Recklinghausen's neurofibromatosis. This has been previously shown in cases in which there were calcified areas in the brain concomitant with neurofibromatous tumors of the skin.

Hyaloma (Colloid Degeneration). Presented by DR. STUART C. WAY and DR. EDGAR C. HAAG.

This patient was previously presented at a combined meeting of the San Francisco and the Los Angeles dermatologic societies on Feb. 17, 1940 (ARCH. DERMAT. & SYPH. **43**:468 [Feb.] 1941).

DISCUSSION

DR. STUART C. WAY: When this patient was first presented, Dr. N. P. Anderson, of Los Angeles, suggested that the condition might represent a vitamin C deficiency. Urinalysis by Dr. Zera Bolin confirmed this impression. The patient's diet was carefully corrected and vitamin C prescribed. Photographs taken one year ago show the improvement that has taken place.

A Case for Diagnosis (Xanthoma). Presented by DR. ALBERT SHUMATE.

J. A., a policeman aged 43, has a narrow, yellow, linear ridge, 0.5 cm. in height and 2 cm. in length, on the dorsum of his left hand. Scattered over the dorsum of the same hand are a few pale hard papules.

The patient states that his hand was scratched while he was searching a prisoner five months ago. The yellow elevated scar developed in this area. Other scars on his body do not show this change.

His general health is good, and he has had no previous disease of the skin.

Examination of his urine showed no abnormalities.

Half of the lesion was removed today for histologic examination.

DISCUSSION

DR. HARRY E. ALDERSON: Xanthoma was the tentative diagnosis, but I am not certain that it is the correct one. Some of the smaller nodules have a yellowish tint when viewed in the daylight.

A Case for Diagnosis (Erythema Nodosum? Necrobiosis Lipoidica Diabeticorum? Panniculitis?). Presented by DR. R. REES (by invitation).

A. R., a white woman aged 53, came to the University of California Clinic on March 27, 1941, complaining of tender red subcutaneous nodules on her arms and legs. She had been seen frequently in the clinic since 1928. Among the various diagnoses made here have been: obesity, hypothyroidism, osteochondritis dissecans of the right knee, cholelithiasis, cystitis and pyelitis. A diagnosis of diabetes mellitus was made in December 1940, because of glycosuria and a fasting blood sugar value of 308 mg. per hundred cubic centimeters. Presumably diabetes has been present since 1934, for at that time the urine showed olive reduction, although no treatment was then instituted. Dietary restrictions and injections of insulin were prescribed in January 1941, and the diabetes has been well controlled for the past two months.

Examination reveals an obese woman with tender subcutaneous nodules on the extensor surfaces of the arms and legs as well as on her right palm and right sole. The younger nodules measure 0.5 cm. in diameter and are erythematous. The older nodules are larger and show no change in the overlying skin. None have regressed.

The patient was hospitalized on March 27 because of fever and pain and swelling of both wrists and ankles. These symptoms have subsided, although an intermittent fever, with a temperature of 38 C. (100.4 F.) by mouth, continues. An intradermal tuberculin test with a 1:100,000 dilution gave a negative result. An intradermal coccidioidin test elicited a positive reaction. The Wassermann and Kahn reactions were negative. The sedimentation rate was 18 mm. in twelve minutes. An intradermal test with protamine zinc insulin gave a negative result. A histologic section of a nodule is presented.

DISCUSSION

DR. R. A. STEWART: The only observation I should like to make is in connection with the coccidioidin cutaneous test. It proves the fallacy of making a diagnosis of coccidioidal granuloma without demonstration of the organism.

DR. G. V. KULCHAR: This condition resembles a recurring nodular nonsuppurative panniculitis.

DR. HARRY E. ALDERSON: This patient has had some injections of insulin. At times insulin has a destructive action on fat. Did the lesions appear at the sites of the injections?

DR. FRANCES A. TORREY: They appeared on the legs and arms but not at the sites of the injections of insulin. The inflammation was deep in the tissue.

DR. STUART C. WAY: Have any of the early nodules completely disappeared?

DR. FRANCES A. TORREY: Not completely, but they are greatly reduced in size. The lesions have been ill defined but movable underneath the skin.

A Case for Diagnosis (Nevoxanthoendothelioma). Presented by DR. H. V. ALLINGTON, Oakland, Calif.

K., a white boy aged 14 days, has had lesions on his skin and in the subcutaneous tissues since birth. He is the first child of apparently healthy parents. His mother, aged 30, had a normal pregnancy with no complications other than moderate nausea during the early portion. The Wassermann reaction early in the course of pregnancy was negative. She received no antepartum medication other than vitamins, calcium and, rarely, acetylsalicylic acid. The baby was born spontaneously, weighing 6 pounds and 8¾ ounces (2,970 Gm.), and aside from his cutaneous lesions he appeared normal. The lesions appeared as reddish, flat or slightly elevated, smooth, droplet-sized to coin-sized areas scattered over the entire body. There were about twenty such lesions. On palpation they were found to be infiltrated and button-like but freely movable with the skin. The largest lesions were on the scalp. One lesion involving the inner canthus of the right eye was fissured and crusted. One on the left side of the scrotum was eroded and exuded a thin serous fluid. One lesion was present on the mucous membrane of the right side of the upper lip. In the first few days following the child's birth many of the lesions increased appreciably in size and became more elevated. Subcutaneous nodules appeared on the right scapula, on the left side of the chest and on the anterior surface of the right thigh. These were smooth, globular, firm and attached to the subcutaneous tissues. The largest of these was about 2 cm. in diameter. Recently, some of the lesions have shown signs of central necrosis with the formation of a dry adherent central eschar.

The baby has regained his birth weight and taken his feedings well and is normally active and alert. No treatment has been given. A physical examination showed no abnormalities aside from the cutaneous condition.

Dark field examinations of serum from the eroded lesions on April 5, 1941 failed to show Spirochaeta pallida. The reactions to Kline and Wassermann tests of both the baby and the mother were reported negative on April 8. A blood count made on April 9 showed hemoglobin 120 per cent and white cells 12,475, with monocytes 8 per cent, large lymphocytes 2.5 per cent, small lymphocytes 28.75 per cent, neutrophils 60 per cent (segmented 48.5 per cent and nonsegmented 11.5 per cent), eosinophils 0.25 per cent and plasma cells 0.5 per cent.

A specimen for biopsy was taken from a lesion on the right leg. Dr. Gertrude Moore described the section as showing a large accumulation of embryonal fat with some adult type intermixed and a few scattered inflammatory cells. The masses of fatty tissue were encapsulated in fibrous connective tissue. No decided inflammatory reaction was noted. There was no evidence of specific inflammation. Her diagnosis was chronic inflammation involving the fatty tissue.

DISCUSSION

DR. H. J. TEMPLETON, Oakland, Calif.: I believe all one can say is that the child has rapidly growing, probably malignant tumors of the skin. I made the suggestion that those on the scalp looked like nevoxanthoendothelioma. The microscopic picture is that of a rapidly growing structure with cells that are taken to be fat cells.

DR. A. E. INGELS: I feel that the tumors can be diagnosed only microscopically. The histologic description would coincide with mycosis fungoides just as well as with the diagnosis given.

NEW YORK DERMATOLOGICAL SOCIETY

EDWARD R. MALONEY, M.D., *President*

J. GARDNER HOPKINS, M.D., *Secretary*

April 22, 1941

Congenital Ichthyosiform Erythroderma; Harelip; Cleft Palate. Presented by DR. EUGENE F. TRAUB.

B. E. Z., a girl aged 3 years, a private patient, according to the mother's statement was born with a harelip and cleft palate and was hospitalized from birth. At the age of 4½ months there was no evidence of any cutaneous eruption or abnormality. When the child left the hospital at the age of about 5 months, however, there were some redness and thickening of the skin, especially about the knees, and this gradually spread until at present the child is suffering from an eruption which involves the body completely with the exception of an area on the chest above the nipples and around the neck, the upper part of the shoulders, the face and the scalp. Even here there are slight indications of some erythema and scaling.

The eruption manifests itself by a thickened, erythematous skin with desquamation. It gives off a rather foul odor as a result of lack of cleanliness or as part of the disease. There seems to be some pigmentation, although this is not as pronounced as seems apparent, because if the child is thoroughly cleansed most of this disappears. On the lower part of the back particularly there seems to be a definite increase in the lanugo hairs, almost suggesting a pigmented hairy nevus. In the areas of eruption variously shaped plaques of erythema appear. They are crescentic or horseshoe shaped or of other bizarre configuration. The erythema and pigmentation suggested a phenolphthalein eruption, which, however, has been definitely excluded.

The Wassermann reaction of the blood was negative. The histologic diagnosis was reported as ichthyosiform nevus.

DISCUSSION

DR. J. GARDNER HOPKINS: I thought this condition was a bathing trunk nevus. There did not seem to me to be much erythroderma. There were brown pigmentation and hypertrichosis stopping in a sharp line on the trunk. That does not, however, agree with the mother's statement that the eruption spread.

DR. JEROME KINGSBURY: I agree with the diagnosis as presented.

DR. HOWARD FOX: The name used by the presenter for this condition describes it perfectly. There is redness, and the eruption is ichthyosiform and congenital. It is so extensive that the flexor surfaces are not spared, as in many cases of ordinary ichthyosis. The eruption does not correspond to the usual bathing trunk nevus, as in a case I reported years ago (*J. A. M. A.* **58**:1190 [April 20] 1912), in which there were chiefly diffuse areas of pigmentation with a thick growth of hair.

DR. HANS J. SCHWARTZ: I agree with the diagnosis as presented.

DR. PAUL E. BECHET: I think the interesting point in this case is the development of hair in that nevoid lesion. All of the patients with congenital ichthyosiform erythroderma that I have seen have had no hair but showed exactly the picture this child presents on the knees and legs. Of course, the whole condition is a nevus, but I was wondering whether there was a mixture of a hairy nevus, as Dr. Hopkins suggested, besides a typical ichthyosiform erythroderma. Ichthyosiform erythroderma does not end in a sharp line as this does and is more disseminated.

DR. FRED WISE: My impression is similar to that of Dr. Hopkins and Dr. Bechet. I first noted the lesion on the back and found a nevus with long hair,

light in color, not black as is usually seen. The rest of the eruption seems to be ichthyosiform erythroderma. I think the child has both types of embryonic defect.

DR. EUGENE F. TRAUB: I do not believe the erythema was as noticeable today as it was on the other occasion when I saw this child, at which time the erythema in peculiar configurated horseshoe-shaped patterns was the outstanding feature. Apparently the erythema has been present from the beginning, for at Buffalo the question was studied as to whether this condition might be a phenolphthalein eruption superimposed on the nevus. The question brought up by Dr. Bechet and Dr. Wise in regard to the hair is puzzling; there is certainly an increase in the amount of hair. Whether it may be part of the picture of congenital ichthyosiform erythroderma I do not know. I could not find any definite answer in the literature. I think the explanation is that conditions of this type are all congenital abnormalities. There is no reason why this patient cannot have the feature of overgrowth of hair as part of the entire picture.

Melanoma of the Ear with Metastases. Presented by DR. EUGENE F. TRAUB.

A. B., a woman aged 63, a private patient, states that twenty-eight years ago, at the time of delivery of her first child, she received an injury to her left ear. Apparently there was a tiny, smooth, flat, dark brown, pigmented mark near the middle of the outer edge of the ear. The ear remained sore for some time. About sixteen years ago the patient had her hair dyed, and some pigmentation was then noticed on the left ear, which she thought was due to the hair dye. A vigorous attempt was made to remove this, but apparently some of the pigment was part of the original mark and could not be removed. Nothing more was seen until about one and one-half years ago, when it was noted that several spots about the ear were getting lumpy and bleeding occasionally. There has been some bleeding occasionally since that time.

The patient now presents the original nevus, which has increased in size but slightly and is little thickened, a great number of metastatic deeply pigmented nodules and some deeply pigmented masses one or two of which show early ulcers and bleeding and involve the greater part of the left ear. The lymph nodes of the neck on the left side are much enlarged, so that a mass can readily be seen as well as palpated.

The case is presented for therapeutic suggestions.

DISCUSSION

DR. HOWARD FOX: The eruption has a typical appearance of a malignant melanoma with satellite lesions. The astonishing feature is the extremely long duration of the process. I should be opposed to any treatment in this case.

DR. A. BENSON CANNON: I should think that radical surgical treatment was urgently indicated, provided that this woman's physical condition was good. I should remove not only the ear but also the surrounding skin and the regional glands. I have observed similar cases of melanoma in which radical surgical treatment has been followed by a number of years of good health. I do not believe that one can always make a prognosis for patients with melanocarcinoma, especially persons beyond middle life, in whom the melanomatous process has been slowly advancing. Even when there has already been metastasis to the regional glands, a thorough removal of such foci will sometimes be followed by months or years of useful life. I doubt very much whether this patient has a chance to live more than a few months without surgical intervention.

DR. J. GARDNER HOPKINS: I agree with Dr. Cannon as to the long insidious course of melanoma. One is so impressed by the explosive and rapid development in many cases that one is apt to overlook the condition when it goes on for years, with first one node developing and then another.

DR. J. FRANK FRASER: I disagree with Dr. Cannon's recommendation of removal of the ear. I do not believe that there is enough evidence of malignancy

to justify this procedure. With a history of such long duration, there should be more evidence of metastasis. In regard to the palpable lymph nodes, there is an even chance that the changes in these structures may be inflammatory. I certainly would not entertain the idea of operation without first performing an aspiration biopsy.

DR. EUGENE F. TRAUB: I am grateful for the discussion. I thought I made it clear in my presentation that my idea was that the origin of melanoma is two types of lesions. One type is a nevus present from birth, the melanoma resulting from which is never very malignant. The other type is a smooth, flat pigmented spot which appears later in life and is of short duration only, and the resulting melanoma is usually very malignant, with a bad prognosis and rapid progress of the disease. That is well recognized. In my series of cases I saw these types many times and emphasized them. The statistics from the Mayo Clinic following surgical intervention in cases of this sort have been bad. The patients have done as well or better when surgical intervention and other forms of therapy were not used. This patient was, in fact, sent to me by a surgeon who did not believe operation was justifiable. The patient has also been seen by a dermatologist, who did not examine her closely and failed to notice the enlarged lymph nodes in the neck. He suggested that the ear be removed. There is widespread metastasis throughout the ear, and there are definite metastatic nodes in the neck, which would mean an extensive neck resection. I have not had a roentgenogram of the chest made yet, but it is probable that there may be other metastases already. In addition, this woman is 63 years of age and has a half-dozen medical complications; so she would be a bad surgical risk. In my opinion, with all this evidence, I believe she would be better off if left alone or given radiation locally and to the nodes.

Poikiloderma of Civatte. Presented by DR. EUGENE F. TRAUB.

J. W., a woman aged 70, a private patient, noted an eruption which first appeared on both sides of her neck about one and one-half years ago. She stated that she had an uneventful menopause at the age of 38 and had never had any unpleasant symptoms referable to that period. The eruption on the neck consists of a reticulated network of tiny pigmented papules, white spots and telangiectases. Some of the papules are covered with tiny scales. The eruption is rather sharply demarcated, occurring as a linear band on both sides of the neck and extending slightly on the chest.

The patient is presented because she shows all the characteristic features of this disease and because apparently in this case no direct connection with a menopausal period can be established.

DISCUSSION

DR. FRED WISE: The eruption seems to answer all the specifications described by Civatte with the exception of telangiectases. I thought that was one of the essential features of the disease. Possibly the presenter has seen the patient in a better light and has used a diascope and was able to note telangiectases. Otherwise I cannot suggest any other diagnosis than the one presented.

DR. EUGENE F. TRAUB: I think this condition is really as classic a picture of that disease as I have ever seen. It answers all the requirements. There is telangiectasia too, seen in a good light; it is a little difficult to see otherwise. On looking at the one side only, I first thought the patient might have radiodermatitis. The point of interest to me is that this condition is supposed to occur at an earlier age. In most cases the women have been from 35 to 55 years of age, while this patient is 70 years old. The eruption has been present for only one and one-half years, and she had her menopause at the age of 38. There has not been, therefore, any direct relation to the menopause in this case, as in so many of the other cases reported.

DR. HOWARD FOX: I should like to ask whether the patient consulted the presenter for this rather mild cosmetic defect or whether this was only noticed incidentally.

DR. EUGENE F. TRAUB: She came to me for the cosmetic defect.

Pemphigus Vulgaris Associated with Bat Wing Lesions on the Face. Presented by DR. FRED WISE.

I. C., a married man aged 38, Jewish, first consulted me on Jan. 11, 1941. The eruption had begun about one year previously. He had received full courses of treatment with various remedies, including arsenic, germanin, adrenal cortex extract and high doses of various vitamins, with temporary improvement but frequent exacerbations.

There is a well defined exudative plaque affecting the entire nose and adjacent part of the cheeks, simulating a bat wing patch of lupus erythematosus. This portion of the eruption has failed to improve in spite of many forms of medication, both local and general. On the trunk and extremities there are numerous active bullae and the remains of regressing bullous lesions, varying in size from that of a hazelnut to that of a walnut. The mucosae of the mouth and lips are eroded and emit a foul odor. Although many of the lesions regressed under treatment with adrenal cortex extract, the eruption is now as severe as it had been before treatment was begun.

The presenter requests suggestions as to further therapeutic measures.

DISCUSSION

DR. FRANK C. COMBES: This patient was admitted to Bellevue Hospital several months ago. His condition then was far worse than it is now. The problem was how to feed him because the lesions of the mouth were so severe. His general condition now is much better, although there is little, if any, change in the lesions on the face. I thought all along that the disease was pemphigus vulgaris, but there were many observers who thought it was the Senear-Usher syndrome. He was given desoxycorticosterone acetate and showed some improvement. Many patients with this condition show improvement with hospital rest alone. He said that since leaving the hospital he has gained 3 or 4 pounds (1,300 to 1,800 Gm.). He has had nearly every type of therapy. I have no other suggestions to offer except the administration of desoxycorticosterone acetate for further treatment.

DR. HOWARD FOX: I feel skeptical about the value of any remedy in pemphigus. A few patients treated recently at Bellevue Hospital, I understand, have had some encouraging results with desoxycorticosterone acetate.

DR. A. BENSON CANNON: Dr. Otto Foerster rekindled my interest in the treatment of pemphigus with adrenal cortex extract by telling me of the spectacular cure he had obtained by this treatment. He said that it was essential to have careful laboratory work in conjunction with the administration of the gland. I had used adrenal cortex extract in the treatment of several patients with pemphigus in the last two years but had to abandon use of the drug because of the failures. It is possible that the laboratory studies were not carefully done and checked with the administration of the substance.

DR. FRANK C. COMBES: I made chemical studies of the patient's blood before giving desoxycorticosterone acetate and administered sodium chloride intravenously when indicated.

DR. EUGENE F. TRAUB: In addition to the adrenal cortex extract which was used, why not try vitamin therapy in this case, especially vitamin C, nicotinic acid and vitamin D, if that has not already been done? Beneficial results have been reported with vitamin D and also with ascorbic acid.

DR. FRED WISE: As far as one can judge from the patient's history, which is always more or less questionable, he has had a good deal of treatment with

vitamins. The object of presenting him here is not only for therapeutic suggestions but because he presents lesions on the face which closely resemble lupus erythematosus and which were at first mistaken for that condition. The case supports my contention that the Senear-Usher syndrome is a form of pemphigus with occasional lesions on the face which resemble lupus erythematosus but the histologic picture of which conforms with pemphigus. I should like to ask Dr. Cannon or Dr. Combes whether in administering desoxycorticosterone acetate it is necessary also to give sodium chloride.

Schamberg's Disease; Dermatitis Venenata (Petrolatum). Presented by Dr. J. Gardner Hopkins.

M. M., a man aged 31, a draftee, presents pigmentary lesions on both legs, extending from the ankle to 6 inches (15 cm.) below the knee. Three or four years ago he had a blister on one ankle for which a cod liver oil ointment was prescribed. He has bandaged the left leg and used this ointment continuously for the past three or four years.

Examination shows on both legs extensive areas of brown pigmentation with numerous cayenne pepper spots along the borders, typical of Schamberg's disease. The bandaged area is studded with brown, hard elevations which appear like warts but which can be rather easily detached. They apparently are made up chiefly of compressed horny scales, and their under surfaces show spiny processes projecting rather deeply into the epidermis.

DISCUSSION

Dr. Paul E. Bechet: I have never been able to find a typical example of Schamberg's disease. It includes purpura, atrophy and pigmentation. Most of the cases of Schamberg's disease which have been presented with that diagnosis have to my mind been cases of purpura simplex, and when dermatitis was present it was indistinguishable from dermatitis hemostatica. I personally do not believe that Schamberg's progressive pigmentary dermatosis is a clinical entity.

Dr. William Curth (by invitation): I believe a biopsy should be made in this case.

Dr. R. H. Rulison: It was my understanding that after describing this condition, Schamberg later said he did not consider it a clinical entity and that the condition did not exist.

Dr. Fred Wise: Schamberg described the disease under the name progressive pigmentary dermatosis, and if that is the case, purpura would not be a necessary clinical manifestation. I believe that in this case the patient has a progressive pigmentary dermatosis. Whether such a condition is a genuine example of Schamberg's disease with subsequent keratosis I am unable to say. I doubt, furthermore, whether histologic examination would clear up the matter.

Dr. Eugene F. Traub: I agree with Dr. Wise. I showed a patient with what I thought was Schamberg's disease to Dr. Schamberg, and he told me he was uncertain what did and what did not fit into that particular pattern. This type of eruption is what I usually label dermatitis haemostatica. The keratoses in this case, supposed to be due to the petrolatum, I have observed as part of the same condition, if the atrophy and sclerosis in the leg are severe enough.

Dr. Frank C. Combes: I think one element here which suggests Schamberg's disease, besides the characteristics already mentioned, are the isolated lesions on the dorsum of the foot with normal skin between. I think the keratoses were due to the long-continued use of petrolatum, but I wonder what action the prolonged use of cod liver oil would have.

Dr. J. Gardner Hopkins: Schamberg's disease seems a convenient label for conditions like this, but I cannot be sure this is what Schamberg described. One often sees patients with pigmented lesions on the legs, some dilated capillaries and no preceding dermatitis. A lesion starts in one place and gradually enlarges,

and then there is another focus elsewhere which enlarges. I think a name is needed for this condition. Dermatitis haemostatica such as occurs with varicose veins seems a different process. In cases such as this there is no dermatitis. The keratoses were much more prominent a few days ago, and many have been removed by the patient's attempt to clean his leg. They probably resulted from continuous application of ointment and bandaging and avoidance of water for several years.

Obstinate Syphilitic Onychia and Gumma of the Nose Successfully Treated by Fever Therapy (Kettering Hypertherm). Presented by DR. HOWARD FOX.

J. J., a man aged 42, was previously presented before this society on Dec. 20, 1938 (ARCH. DERMAT. & SYPH. **40**:155 [July] 1939). The unilateral lichen-planus-like eruption which he presented at that time gradually disappeared, leaving a few pigmented spots which are still present. The Wassermann reaction again became positive, and in spite of fairly intensive treatment a gumma developed in the right nostril and severe onychia of the right thumb, left little finger and both great toes. He has been treated with fair regularity by dermatologists in two cities and by myself, his business requiring him to travel constantly. Treatment has consisted of intravenous injections of silver arsphenamine and mapharsen, inunctions and intramuscular injections of mercury, intramuscular injections of a bismuth compound and iodides by mouth. He has had several periods of rest and recreation in Florida and in Maine and has not taken any alcoholic drinks during the past year. The gumma of the nose responded at times to treatment but later recurred. Treatment had had no effect on the onychia. Repeated scrapings from the affected nails showed no fungi, and filtered roentgen ray treatment had no beneficial effect on the nails.

On Feb. 10, 1941 he presented an extremely severe onychia of the aforementioned fingers, onychia and paronychia of both great toes, a perforating ulcer of the heel which interfered with walking and a gummatous infiltration of the right nostril which interfered with breathing.

From February 17 to March 24 the patient was treated in Dayton, Ohio, with the Kettering hypertherm. He received fourteen treatments, given two to three times a week. While he was in the cabinet, for three hours during each treatment his rectal temperature was 105.5 F. At the height of the fever mapharsen in doses of 0.04 Gm. was given intravenously, and between fever treatments a bismuth compound was given intramuscularly. After the ninth treatment the lesions of the skin and the nails were nearly well, and after the twelfth treatment they had entirely cleared. Two additional fever treatments were given for good measure.

When I saw the patient on March 29, 1941 all of the aforementioned lesions had undergone complete involution. The matrix of the nail of the right thumb and of the left little finger had been destroyed by the severe and long-continued inflammation, preventing the future growth of these nails.

DISCUSSION

The members agreed unanimously that the result obtained in this case was excellent.

Generalized Exfoliative Contact Dermatitis (Urine). Presented by DR. A. BENSON CANNON.

M. S., a man aged 66, was admitted to the New York City Hospital, Welfare Island, two weeks ago, complaining of a generalized itching, redness and scaling of eight and one-half months' duration. His family and past histories were irrelevant. The condition had begun between the toes and on the dorsa of the toes as an itching, red, scaling and crusted eruption that was thought to be due to ill fitting shoes. He then applied equal parts of his urine and olive oil over

the feet several times a day. The eruption gradually spread up the legs and eventually covered the entire body and extremities, the patient all the while continuing to apply the urine and olive oil. The skin has been pruritic, and at times he has chilly sensations all over his body and extremities.

Examination shows a universal dermatitis with redness, oozing, crusting and scaling, with a great deal of edema of both the upper and lower extremities and with a blotchy redness of the skin, especially on the trunk. There are numerous excoriations.

The Wassermann reaction of the blood was negative. The urine and the blood count were normal.

DISCUSSION

DR. FRANK C. COMBES: Was a patch test made? The condition in this case is not similar to the dermatitis of Jacquet in infants, which is due to the urea-splitting enzyme.

DR. A. BENSON CANNON: The patient's dermatitis has been so universal as to make it impossible for me to do cutaneous sensitization tests, but I feel reasonably certain from the history of the onset of the dermatitis and from its gradual spread coincident with the application of the urine that the diagnosis is fairly certain. I became familiar with the lay practice of using urine in the treatment of hookworm, vesiculations of the feet and fungous infections of the feet in the South years ago, and it was not unusual to observe a red, fissured, scaly, crusted dermatitis on the areas where the urine was applied. Often a chronic eczematized state would develop as a result of irritation from urine, and it was commonly believed that this chapped-like condition was beneficial in the cure of the trouble.

Generalized Contact Dermatitis (Leather). Presented by DR. A. BENSON CANNON.

E. B., a man aged 65, a shoemaker, was admitted to the New York City Hospital, Welfare Island, on April 20, 1941, with a generalized dermatitis of six months' duration. The past history and family history were essentially irrelevant. The disease began on the legs as a red, intensely itching papular eruption and gradually became generalized. Itching appears in waves about every fifteen minutes, as though a warm flashlike pain were passing over him. The patient has been treated in two hospitals in New York city. Patch tests with possible local irritants showed his skin to be highly sensitive to the outer covering of black shoe leather.

Examination shows generalized redness, swelling, scaling and crusting, which is much more severe on the extremities. On the trunk there are irregular patches of pinhead-sized to millet seed–sized papular red excoriated dermatitis. The patient's general physical condition was otherwise normal.

The urine and the blood count were normal. The Wassermann reaction of the blood was negative.

DISCUSSION

DR. HOWARD FOX: I should like to ask what part of the shoes elicited the positive reactions. As I understand it, five different patch tests should be made in cases of suspected sensitization from shoes. These include tests with the outer and inner surfaces of the leather, both sides of the lining and the tongue.

DR. A. BENSON CANNON: Patch tests were made with all the leathers with which this patient came in contact, and his skin reacted only to the outer portion of the black leather, which produced a vesicular dermatitis. There was no reaction to the inner side of this same leather. This patient was in the New York Post-Graduate Medical School and Hospital for some time, and it was there that the patch tests were made. They were also made at Mount Sinai Hospital, and at both places the same results were reported. The eruption has been so extensive that I have not been able to repeat the tests.

Contact Dermatitis (Underwear Shorts). Presented by DR. A. BENSON CANNON.

V. C., a man aged 24, a Puerto Rican, was admitted to the New York City Hospital, Welfare Island, eight days ago, complaining of swelling, redness and itching of the genitalia and the surrounding areas. The past history and family history were irrelevant. The day after wearing a new pair of underwear shorts, with blue and green stripes, severe itching began around the genitalia and spread over the parts of the skin covered by the shorts. The penis and scrotum became swollen and red, and itching blotches appeared on the thighs and buttocks.

Limited to the parts covered by the underwear shorts is a pinhead-sized to millet seed–sized papular, excoriated eruption with a great deal of edema of the penis and scrotum. A patch test made with a piece of material from the shorts twenty-four hours ago elicited a positive reaction, and there was also a positive reaction from the adhesive tape.

Lupus Erythematosus. Results of Treatment with Autogenous Vaccine. Presented by DR. EUGENE F. TRAUB.

A. J., a woman aged 49, first presented herself at the Skin and Cancer Unit of the New York Post-Graduate Medical School and Hospital in March 1940, with an eruption that had been on the sides of the nose for more than two years. The lesion consisted of a plaque measuring about 1.5 to 2 cm. in diameter or larger, which was covered with adherent dry scales. There were some follicular plugging and some slight telangiectasia. The Wassermann and Kahn reactions of the blood were negative. Histologic examination of the lesion on the left side of the nose confirmed the diagnosis of lupus erythematosus.

The patient was carefully investigated for foci of infection, but no active foci were found. Nevertheless, smears were made of material taken from the tonsils and sinuses, and a culture of the feces was made. An autogenous vaccine was prepared, and the patient has been receiving weekly injections of the vaccine, beginning with an initial dose of 0.2 cc., being gradually increased until 1 cc. was given. To date she has received ten injections. The eruption has disappeared, and there remains only an atrophic area of skin marking the site of the original lesion.

DISCUSSION

DR. FRANK C. COMBES: I think Dr. Traub should be congratulated on the results which he has obtained. I have had in mind the possible relation between arthritis, psoriasis, lupus erythematosus and gold sodium thiosulfate. This drug has some beneficial effects, it is known, in arthritis. It is also known that frequently arthritis is associated with psoriasis, and I have thought of the possibility of a focus of infection, possibly in the intestinal canal, being an etiologic factor in lupus erythematosus. Many internists think that a predominating organism in the intestinal canal is responsible for arthritis.

DR. EDWARD R. MALONEY: I have treated 2 or 3 patients in this way. One patient was a man who had his tonsils removed, and an autogenous vaccine was made from them. He has now been treated for about two months with that vaccine, and his condition is decidedly improved. He had typical bilateral lesions on the face. I am sure that if this therapy were used more frequently more patients with lupus erythematosus who are resistant to gold therapy would show improvement and cure.

DR. HOWARD FOX: This unusually good result deserves discussion, especially as Dr. Traub says he has obtained similar results from vaccine therapy in a series of 10 or more cases. This method at least has one advantage over gold therapy in that it is entirely safe.

DR. EUGENE F. TRAUB: I have had 10 or 15 cases in about seven years.

DR. GEORGE M. MACKEE: I wonder if Dr. Traub has used any system of control in an attempt to prove whether the good results are due to a specific

vaccine effect or whether they are due to nonspecific protein therapy. Many years ago when Dr. Schamberg recommended gold therapy for lupus erythematosus, his first preparation was a gold protein. The dose that he recommended frequently caused considerable systemic reaction; not infrequently there was protein shock. It seemed to me that the results obtained with the gold protein in lupus erythematosus were better than those obtained with the subsequent gold sodium thiosulfate, which was substituted for the gold protein because of severe reactions. If Dr. Traub has not already done so, it will be interesting to compare the results obtained with a supposedly specific vaccine with those obtained with a nonspecific protein and, perhaps, with protein shock.

Dr. J. Gardner Hopkins: I think it is agreed that this is a beautiful demonstration. I believe it was Barber who first used this method of treatment.

Dr. R. H. Rulison: Did this patient have some focus of infection removed?

Dr. Eugene F. Traub: No focus of infection was removed in this case.

Dr. Edward R. Maloney: A patient who shows no improvement after considerable gold treatment but who does improve with autogenous vaccine, I think, tends to give one the idea that there is some specific action from that specific vaccine rather than just from the nonspecific protein. I have given it to 2 patients; actual foci of infection were found in these patients, and pus from those foci was used. I think good results are more likely to be obtained with that kind of vaccine than with vaccine made from material from the nose, for instance, or from the intestinal tract.

Dr. Paul E. Bechet: Bearing out Dr. MacKee's remarks, this woman showed considerable induration and erythema on the arm at the site of the last injection, which she had yesterday. That would indicate some nonspecific protein effect.

Dr. Eugene F. Traub: I have already made a report on the treatment of chronic urticaria which I thought might be due to a bacterial allergy and have listed lupus erythematosus in the same group of conditions. The results have not all been good. I cannot tell the exact percentage of cures, but I have cleared up the condition in a number of cases. I attempt first to find a definite focus of infection and remove it, especially tonsils and abscessed teeth. When I cannot find anything definite, routine cultures are made of material from the nose, throat, tooth sockets or stools, for example, and a vaccine is made of the predominant organism. If there are a number of pathogenic organisms, the vaccine is made with all of them. There have not been any unpleasant reactions or exacerbations. In the majority of patients the condition has shown improvement, and in perhaps 25 per cent it has cleared up. As lupus erythematosus is a recurring disease, I am trying to have as long a follow-up study as possible before publishing results.

I cannot answer Dr. MacKee's question whether this treatment causes a nonspecific protein reaction, but the same type of therapy in the treatment of arthritis is not looked on as nonspecific. Assuming that the reaction was due to a nonspecific protein, I would say that the therapy is still worth trying.

In regard to Dr. Combes's mention of arthritis, an exceedingly sick patient was admitted to the hospital with deformed nails and a peculiar crusting beneath them. Some of the lesions looked almost like pustular psoriasis, while the lesions on the face looked like a butterfly lupus. There were areas of eruption all over the body, some of which were definitely purpuric. A medical consultant was called. The patient had been treated for acute arthritis which apparently followed a definite infection. Every one agreed that she had a Libman-Sacks syndrome. She received a number of transfusions and large doses of vitamin C. I do not know whether the improvement was due to the transfusions or to the vitamin C, but she was able to leave the hospital and is apparently much improved despite having an afternoon fever and apparently active tuberculosis as the focus. I believe that in some cases of acute lupus erythematosus, vitamin C therapy may possibly have a distinct place. In fact, it can be combined with other forms of treatment.

Nodular Sarcoid with Epidermal Cysts of the Cheek; Tuberculosis Verrucosa Cutis (?) of the Elbow. Presented by DR. J. GARDNER HOPKINS.

E. M. M., a Negress aged 40, is presented from the Vanderbilt Clinic, with lesions on the left cheek and the right elbow of eight or nine years' duration. In the center of the flush area of the right cheek there is a raised discoid lesion with a mamillated surface. There are no subjective sensations. The lesion was once incised, after which it became more swollen. It has at times discharged a cheesy substance. On palpation it is somewhat boggy, with a number of small firm nodules in a softer mass. The follicular openings are dilated. There is no epidermal change. Over the point of the right olecranon, there is a raised horny, verrucous lesion, 1 cm. in diameter.

Histologic examination of a specimen from the lesion on the cheek showed no special change in the epidermis. The collagen was largely replaced by bands of epithelioid cells in sarcoid arrangement, with here and there a typical Langhans giant cell. There were several minute sebaceous cysts and at the base of the section the wall of a large cyst. Histologic examination of a specimen from the lesion on the elbow was unsatisfactory. An intradermal test with a 1 : 100,000 dilution of old tuberculin elicited a negative reaction.

DISCUSSION

DR. G. F. MACHACEK (by invitation): I agree that this condition is a benign form of tuberculosis, but the histologic picture is not absolutely typical of sarcoid; there are certain features which might make one question the diagnosis.

DR. R. H. RULISON: I think there is more than one condition present.

DR. J. GARDNER HOPKINS: The question which interested me was the relation of this tuberculoid granuloma to the epidermal cysts. As far as I know, there is no great tendency for a sarcoid to cause the development of cysts. It seemed more likely that the patient had a nevoid collection of epidermal cysts in this area and that the development of the sarcoid was secondary.

A Case for Diagnosis (Pemphigus Vegetans? Dermatitis Vegetans?). Presented by DR. FRED WISE.

R. S., a woman aged 49, registered at the Skin and Cancer Unit of the New York Post-Graduate Medical School and Hospital on April 5, 1941, complaining of cutaneous lesions of seven weeks' duration. She gives no history of previous disease of the skin. Her general health, except for the loss of 22 pounds (10 Kg.) in the past four months, has been good. There were no premonitory symptoms. The lesions started first on the head with a crop of blisters which were pruritic; three weeks later the eruption appeared on other areas.

The patient is a cleaning woman, of dull mentality, 57½ inches (146 cm.) in height and weighing 127 pounds (57.5 Kg.). She presents lesions on the scalp, in the right axilla and in the periumbilical, right inframammary, anogluteal, perineal crural and pubic regions. There are no lesions in the mouth, but the tongue is swollen and red. On the scalp, especially at the periphery, are irregular, greenish, crusted, vesicular patches, the hair being matted together. On the upper half of the back of the neck, occupying its entire width and extending within the hair margin, is an angular patch with borders raised 2 to 3 mm. Within that patch are numerous closely set, fairly uniform, pea-sized, firm vesicles. At the borders the epithelium is denuded, exposing eroded vegetating excrescences covered with scant grayish mucus and fetid discharge. Underneath the breasts and in the right axilla are similar patches, 2 by 4 inches (5 by 10 cm.) in diameter, with some satellite lesions. These patches are soft, vegetating, macerated, raw and hemorrhagic at the borders, as if the epidermis had just been scraped. In the anogenital, crural and pubic regions the lesions are most extensive, forming a continuous area from the lumbosacral to the perineal and inguinal regions and ending above the pubic hair line. There are several small, pigmented, flat, brownish spots on the chest.

The blood count showed 4,000,000 erythrocytes and 13,500 leukocytes, with a differential count of 34 per cent polymorphonuclear leukocytes, 28 per cent lymphocytes, 23 per cent eosinophils, 3 per cent monocytes and 12 per cent band forms. There was 78 per cent (13 Gm. per hundred cubic centimeters) hemoglobin. Urinalysis showed a slight reaction for albumin.

Histologic examination by Dr. Wilbert Sachs of two fresh vesicles taken from the pubic region suggested the diagnosis of pemphigus. In the upper and middle parts of the cutis the vessels were dilated and there was a focal and diffuse cellular infiltration. In the subepidermal region there was a moderate amount of interstitial edema. The cellular infiltration was composed of small round cells, many wandering connective tissue cells and numerous polymorphonuclear leukocytes, including eosinophils. The vessel walls and intima were swollen. The lumens were packed with eosinophils. The epidermis was moderately acanthotic, and in the center of the section there was an intraepidermal vesicle within which were a moderate number of eosinophils. The surface of the vesicle was crusted.

Other laboratory tests gave negative results.

DISCUSSION

DR. FRANK C. COMBES: I agree with the diagnosis of pemphigus vegetans, and I have fears as to a favorable prognosis. The condition seems to have progressed rapidly and with a tremendous loss of weight in a short time. I cannot offer any suggestions as to therapy.

DR. JEROME KINGSBURY: I do not feel that this condition is pemphigus vegetans. In my opinion it is an infectious vegetating dermatitis.

DR. A. BENSON CANNON: My opinion coincides with that of Dr. Kingsbury. I think the pyodermic element is the outstanding feature in this case, and I believe it is more likely that the vegetative growths are the results of a staphylococcic infection. I suggest that the patient be given the benefit of thorough cleanliness (with soap and water) and potassium permanganate baths and that the affected parts be painted with a 3 per cent solution of gentian violet.

DR. PAUL E. BECHET: I agree with the diagnosis of pemphigus vegetans. I have seen the patient two or three times, and at times she has had distinct bullae. The entire eruption is moist and covered with moist loose scales. There has also been rapid loss of weight.

DR. FRED WISE: In presenting the patient I expressed some doubt about the diagnosis. I am inclined to look on the condition as pemphigus vegetans, because the histologic structure is in favor of pemphigus. Whether the histologic structure of dermatitis vegetans would be more characteristic than that of pemphigus I do not know, but I imagine it would show considerable differences when the two diseases are compared. The fact that the lesions on the scalp show no vegetations also makes me favor pemphigus as against dermatitis vegetans. The buccal mucosa is swollen; the tongue is swollen and inflamed, and there are lesions at the corners of the mouth. Although these signs do not speak against dermatitis vegetans, they are more in favor of pemphigus. I agree, however, with Dr. Cannon that every effort should be made to ascertain if this disease is due to pus organisms directly or whether pus organisms are a secondary manifestation.

Hyperkeratotic Nevus. Presented by DR. PAUL E. BECHET.

M. D., a Negress aged 11 years, was previously presented by Dr. Max Scheer before the Section of Dermatology and Syphilis of the New York Academy of Medicine in April 1941 (this issue, p. 1127).

DISCUSSION

DR. EUGENE F. TRAUB: I think this case is remarkable. It does not make much difference what such a condition is called, provided the name is correctly

descriptive and every one knows what it stands for and then uses it. I think the term ichthyosis hystrix was probably coined for just such a condition as this, but generally speaking I do not like that term. Naevus verrucosus would be my choice.

DR. R. H. RULISON: I do not like the term ichthyosis for this type of condition. I think that to call it a nevus is much more descriptive and more accurate.

DR. FRANK C. COMBES: I prefer the term ichthyosis hystrix. I think it is more descriptive than hyperkeratotic nevus.

DR. HOWARD FOX: Clinically, this condition is a form of ichthyosis, and the descriptive adjective hystrix could be properly added to the name. In the broad sense, ichthyosis is a nevus, but to call the condition in this case simply a hypertrophic nevus is inadequate. A hypertrophic nevus might not be larger than a split pea, but it could not properly be termed ichthyosis.

DR. PAUL E. BECHET: For the reasons advanced this condition is essentially a nevus. It is a very striking picture, almost that of a circus freak. It is a dry, greatly hyperkeratotic type of eruption, and I should prefer the term hyperkeratotic nevus to ichthyosis hystrix.

A Case for Diagnosis (Lupus Erythematosus? Sarcoid? Lymphoblastoma?). Presented by DR. PAUL E. BECHET.

C. F., a man aged 38, presented from the Skin and Cancer Unit of the New York Post-Graduate Medical School and Hospital, states that twelve years ago he noticed a redness and scaliness in the right postauricular region. This extended considerably in a comparatively short time.

On inspection, a large, scarred, greatly inflamed area in the occipital region can be discerned. It is devoid of hair, shows much atrophy and scarring and is clinically typical of lupus erythematosus of the scalp. On the face there are a number of dark red, greatly elevated, smooth, deeply indurated, tumor-like masses.

The urine was normal. The Wassermann and Kahn tests of the blood gave negative results. Histologic examination was indeterminate. There were lymphoid cells present, and for that reason some type of lymphoblastoma was considered.

DISCUSSION

DR. J. FRANK FRASER: I disagree emphatically with the diagnosis of sarcoid. I also disagree with the view that the lesion may belong in the lymphoblastoma group. The fact that lymphoid cells are present in the section has little significance. Lymphoid cells are found in various other lesions. I found not the remotest histologic support for this diagnosis. My diagnosis is lupus erythematosus. The lesions on the scalp are typical, and the lesions on the neck fit in well with the appearance of the nonscaling, erythematous plaques or nodules of that disease. In regard to the histologic picture, while all the microscopic features are not present I am convinced that the dominant changes, such as the presence of horny plugs and the numerous areas of round cell infiltration following the course of the blood vessels of the appendages, fully harmonize with the clinical diagnosis of lupus erythematosus.

DR. EUGENE F. TRAUB: I agree with Dr. Fraser that the lesions on the scalp look like healed lesions of lupus erythematosus. There is no scaling at this time. If no treatment has been given to the lesions on the scalp, I do not know why they should have this particular appearance, unless there has been spontaneous improvement. As for the lesions which resemble early changes on the neck and cheek, I thought they might be lupus erythematosus in the edematous stage. However, on being questioned the patient said they had been there for from one to ten years, so that if they are in an early stage it has taken some time for the edema to disappear. Therefore, I do not believe the lesions on the cheek and behind the ear are ordinary lupus erythematosus.

DR. FRED WISE: I am in agreement with Dr. Fraser.

DR. G. F. MACHACEK (by invitation): I would rule out sarcoid on the histologic evidence. The question is whether the condition is lupus erythematosus or lymphoblastoma. I think that sometimes there is difficulty in evaluating the histologic picture. Foci of lymphocytes found in certain forms of lupus erythematosus may suggest lymphoblastoma. In view of the scarring of the scalp and in spite of the nodular lesions on the face, I think this condition is probably lupus erythematosus. I suggest that the response of one lesion to roentgen rays might be of some aid in making the diagnosis.

DR. LEWIS B. ROBINSON (by invitation): I believe this condition is lupus erythematosus. I think that sometimes in the bearded region in men one may see edematous lesions like these last for a long while.

DR. R. H. RULISON: I agree with Dr. Robinson.

DR. FRANK C. COMBES: I agree with the diagnosis of lupus erythematosus, and I should like to ask whether or not these lesions on the cheek change. Do they become better or worse in the summer when exposed to the sun, or do they remain stationary?

DR. HOWARD FOX: I agree with the diagnosis of lupus erythematosus and that a good therapeutic test would be afforded by a few roentgen ray treatments.

DR. J. GARDNER HOPKINS: I did not see any of the symptoms which are almost universal in lupus erythematosus. There was no scaling, no follicular plugs, no depigmentation or pigmentation and no telangiectasia. The condition clinically looked more like sarcoid, and the histologic picture was much like that of leukemia cutis. The lymphocytic infiltration was more uniform than one usually sees in lupus erythematosus. If the condition is clinically a sarcoid and histologically a lymphoblastoma, then it would come under the heading of what Spiegler and Fendt described as their type of sarcoid, which is usually thought to be nothing like the condition usually called sarcoid. I have never been confident of the diagnosis of a Spiegler-Fendt sarcoid, but I wonder if it could not be considered in this case.

DR. PAUL E. BECHET: The reason for the tentative diagnosis of lymphoblastoma was the presence of lymphoid cells in the histologic section. Dr. Fraser has said these can be found in conditions other than the lymphoblastomas. If that is so, that leaves out that diagnosis entirely, for clinically the patient has a typical lupus erythematosus of the scalp and the lesions on the cheek are sarcoid. Whether the sarcoid is a Boeck or Spiegler-Fendt type I do not know. The lesions have been present for twelve years. The first lesion on the neck appeared twelve years ago, and the second patch on the other side appeared two or three years later. It is impossible to consider these as lupus erythematosus. I admit that early lupus erythematosus and Boeck's sarcoid are sometimes indistinguishable clinically, but in this particular case the induration of the lesions is against lupus erythematosus. It is perfectly possible for a patient to present lesions of lupus erythematosus and of sarcoid at the same time. It is interesting to note that gold therapy will either cure or improve the lupus erythematosus but will have no effect at all on the sarcoid.

Lichen Morphoeicus (Crocker). Presented by DR. R. H. RULISON.

G. B., a man aged 36, a painter, first noticed in April 1940 white patches on the back of the left hand, on the left side of the root of the neck and on the right shoulder posteriorly. These areas were smooth and not raised. They were relatively hard, and the skin felt thickened. He was first seen on May 23, and a tentative diagnosis of scleroderma was made. The only treatment recommended was massage with theobroma oil.

The patient returned ten months later (March 7, 1941). In addition to the lesions seen in 1940, new ones have appeared on both forearms, the root of the neck, the shoulders and the back and in scattered areas on the thorax. These

lesions are of various sizes and are all white. Some have a verrucous surface, and some are raised in a plateau formation. There is no sensory disturbance, and there are no lesions on the mucous membranes.

A biopsy specimen was taken from the lesion in the region of the left scapula. Histologic examination was made by Dr. M. V. Boardman, who reported the following observations: The vessels of the middle and upper parts of the cutis showed moderate dilatation and only slight perivascular round cell infiltration. There was no infiltration of the deep part of the cutis and only slight edema in these portions. The papillary portion of the cutis showed sclerosis of the connective tissue, as evidenced by deeper staining (greater density) of the bundles and their lying parallel to the epidermis. Scattered in this sclerotic area were small round cells in no particular arrangement. The epidermis was only slightly thinner than normal, with some flattening of the rete pegs, although their presence was still noted. The basal cell margin was intact, save in one area, as later noted. There was no exocytosis into the epidermis. Some of the prickle cells were hydropic. The granular and keratin layers were normal, save that in several areas keratotic plugs were noted, not in the follicular orifices. At one point the epidermis was sharply separated from the cutis, but at this point there was no significant change in the underlying cutis. The basal cells of this area appeared to have been torn away from the cutis. This area might well be a pseudovesicle produced by the contracture of the sclerotic upper part of the cutis away from the epidermis. Elastic tissue stain showed some fragmentation of elastic tissue. In the upper part of the cutis, in the sclerotic zone, elastic tissue was scarcely noted at all. The impression gained from studying this slide was that the condition was lichen morphoeicus (Crocker).

DISCUSSION

DR. HOWARD FOX: I think this condition is lichen sclerosus et atrophicus. The patches are white and show follicular plugs. It is certainly neither ordinary lichen planus nor morphea.

DR. EDWARD R. MALONEY: I agree with everything Dr. Fox has said, and I think the clinical diagnosis here is lichen sclerosus et atrophicus. The color, of course, resembles the lesions of morphea. There is erythema around all of the lesions and not a violaceous border as in morphea.

DR. FRANK C. COMBES: I observed a case, that of a woman, in which the condition was more extensive than in this one but disappeared spontaneously in about two years.

DR. FRED WISE: I treated a woman, the wife of a physician, who had the same condition. It cleared up almost entirely with massage, no internal treatment being administered at the time.

Keratosis Follicularis. Presented by DR. A. BENSON CANNON.

J. H., a man aged 52, was presented before the New York Dermatological Society on March 25, 1941 (ARCH. DERMAT. & SYPH. **44**:767 [Oct.] 1941).

Histologic examinations made of two different specimens at separate laboratories were reported as showing typical keratosis follicularis. The patient has improved under treatment with large doses of vitamin A.

Ulcer of the Leg with Radiodermatitis. Presented by DR. PAUL E. BECHET.

F. W., a man aged 46, was presented before the New York Dermatological Society on Feb. 25, 1941 (ARCH. DERMAT. & SYPH. **44**:513 [Sept.] 1941).

The patient is still coming to me for treatment and has improved greatly with bland treatment. The ulcer is much more shallow and superficial and is apparently going to be controlled by this therapy, as it has been before. It may then break down again later, as it has also done before. Considering the healing, there is no doubt that the ulcer is not malignant.

Possible Widespread Lupus Erythematosus in Which Dermatomyositis was Suspected. Presented by DR. FRED WISE.

A. G., a woman aged 39, was presented before the New York Dermatological Society on Jan. 28, 1941 (ARCH. DERMAT. & SYPH. **44**:496 [Sept.] 1941).

I am still unable to arrive at a definite diagnosis in this case. Examination of the urine showed no excess of porphyrin.

PHILADELPHIA DERMATOLOGICAL SOCIETY

HERMAN BEERMAN, M.D., *Chairman*

DONALD M. PILLSBURY, M.D., *Secretary*

May 16, 1941

Diffuse Scleroderma and Dermatomyositis. Presented by DR. CARROLL S. WRIGHT and DR. REUBEN FRIEDMAN.

C. F., a white man aged 36, presents a generally dry, shiny, tense and thickened skin. Brownish hyperpigmentation and depigmentation are present on the arms, hands, trunk and thighs. The abdominal skin and the scrotum are particularly thickened. Both hands are tense, cold, white and atrophic. The fingers are fixed in moderate flexion. There is impairment of motion in the wrist, shoulders, elbows, cervical portion of the spine and ankles. The muscles of the back, of the back of the neck and of the abdomen are abnormally hard and firm. The patient had jaundice at the age of 18. He was well until October 1939, when his right knee became swollen, tender and painful. The left knee, feet, hands and forearms subsequently became similarly involved. He was confined to bed in January and February 1940 but recovered sufficiently to return to work. He suffered a recurrence in October 1940, associated with generalized dull pains. During the last two months the swelling of his hands and forearms has subsided. He has lost 68 pounds (31 Kg.) since January 1941. The basal metabolic rate was + 13 per cent; the sedimentation rate was 21 mm. in thirty minutes. Examination of the blood revealed 62.2 per cent hemoglobin, 3,870,000 erythrocytes and 13,750 leukocytes, with 77 per cent polymorphonuclear leukocytes, 11 per cent lymphocytes, 6 per cent monocytes, 5 per cent eosinophils and 1 per cent basophils; the color index was 0.81. A urinalysis and serologic tests of the blood for syphilis gave negative results. The result of a sugar tolerance test was normal. There was no roentgenographic evidence of arthritis involving the bones of the hands or wrists; concentric atrophy of the phalanges was not present.

DISCUSSION

DR. H. E. TWINING: I agree with the diagnosis of scleroderma but not with that of dermatomyositis. In 2 cases of the latter condition that I have observed there have been severe constitutional symptoms. There were violaceous puffiness around the eyes and exquisite tenderness over the areas involved. When the swelling subsided, the muscular atrophy was marked. There was great loss of strength. One of the patients recovered; the other died. There is a great difference between the muscular atrophy in the cases I have encountered and that in this case.

DR. FRED D. WEIDMAN: My thoughts ran very much the same way. I saw no evidence of myositis but thought that perhaps at some previous stage Dr. Friedman had observed it. Of course, in the earlier acute stage there may be symptoms of weakness and acute inflammation, which later disappear. I think one will have to depend on the history in respect to the myositis.

DR. REUBEN FRIEDMAN: The patient has complained of considerable localized pain, swelling and tenderness. He has had difficulty in chewing because of pain in the tense masseter muscles. He states that he "squeaks all over" when attempting to sit or move and that he is "in need of a grease job." I think all these symptoms are indicative of myositis rather than of scleroderma. The loss in weight within the last six months is certainly more in keeping with dermatomyositis. Another point in favor of the diagnosis of dermatomyositis is the history of exacerbations and remissions. This is not characteristic of scleroderma, which is a uniform, chronic condition not subject to remissions.

DR. SIGMUND S. GREENBAUM: One thing that does fit in with a diagnosis of scleroderma is the infiltrated condition of the scrotum.

Pigmented Nevus. Presented by DR. THOMAS BUTTERWORTH, Reading, Pa.

B. F., a white woman aged 53, exhibits a sharply defined pigmented lesion on the left cheek beginning at the side of the nose and extending over an area about 2¼ inches (6 cm.) in diameter. The greater portion of the lesion is light or medium brown, but some parts are almost black. At the upper and outer edge of the patch there is a flat pink papule. The regional lymph glands are not palpable. When the patient was 40 a dark brown "mole" developed on the left cheek bone. The lesion enlarged slowly until about a year ago, and since then its growth has become more rapid.

DISCUSSION

DR. MORRIS MARKOWITZ: This nevus at present shows no bleeding and no other significant changes. I should call the best treatment "noli me tangere."

DR. DONALD M. PILLSBURY: I do not believe that this lesion is a nevus, in spite of the large size and the fact that there are no similar lesions on the face or trunk. I think it is an area of seborrheic keratosis. Part of it is raised; the rest is entirely macular. There is no infiltration. I think conservative removal by light electrodesiccation and curettage would produce a satisfactory result.

DR. CARROLL S. WRIGHT: I agree with Dr. Pillsbury, but I think the ideal treatment is with solid carbon dioxide. I have a patient who had a lesion much larger than this, which was removed without any scarring. An attempt at removal by electrodesiccation had been made, and the patient had become so discouraged by the time required for healing that she had decided not to have anything further done. With solid carbon dioxide I obtained a fine result.

DR. A. STRAUSS: A satisfactory method is by means of contact roentgen therapy. I had a lesion like this removed from my forehead with one treatment. There was little reaction, but depigmentation resulted. The dose was 1,500 r, unfiltered.

DR. PATRICIA DRANT: A considerable portion of the lesion is not elevated, and the pigment does not seem to be deep. I think that on those areas one could get splendid cosmetic results with little disturbance to the patient by the use of a strong resorcinol peeling paste. In the middle portion, which is darkly pigmented, I should use solid carbon dioxide or electrodesiccation, not coagulation.

DR. SIGMUND S. GREENBAUM: Some of the area was almost black. I do not recall ever seeing a seborrheic keratosis as dark as that. A biopsy is indicated.

DR. THOMAS BUTTERWORTH, Reading, Pa.: I had solid carbon dioxide therapy in mind, but I think Dr. Drant made a good suggestion when she said that solid carbon dioxide should be used on the outer portion. I should be inclined to take off the thicker portion by electrodesiccation and remove the pigmentation with solid carbon dioxide.

DR. A. STRAUSS: An old-fashioned remedy that has not been mentioned is trichloracetic acid.

DR. SIGMUND S. GREENBAUM: Darier called attention to the fact that the best treatment for melanomas is electrolysis.

A Case for Diagnosis (Dermatitis Factitia? Vicarious Menstruation?).
Presented by Dr. Charlotte Backus Jordan, Stroudsburg, Pa.

A. N., a white woman aged 25, presents on the dorsum of the left hand and on the extensor surface of the left forearm two quarter-sized ulcers with a dark blue granulating surface surrounded by blue pigmentation. There are three scars of previous lesions on the face, numerous scars on the left arm and one scar on the lower part of the right side of the abdomen. The patient states that with the appearance of the lesions she has attacks of vomiting, feels as if she has a high temperature and is generally ill. She has menstruated only five times in her life. The present lesions have occurred during the past year, and previous to that she had black and blue lesions over various parts of the body which she said looked much like the remains of burns but did not leave any scarring. She has been a patient in the hospital nine times during the last eleven years. In 1930 she was admitted with hysteria and "amenorrhea of hysterical etiology." Two months later she underwent an appendectomy. In 1937 she was admitted with a diagnosis of spastic paralysis of the bladder, and resection of the presacral nerve was done. Again that year she was admitted with evidence of pituitary dysfunction. In 1938 she had a foreign body in the thigh, which proved to be a needle about 3 cm. long. In November of that year she was again admitted with acute retention of urine, and in 1939 she had evidence of subacute cholecystitis. In March 1941 she was admitted with a diagnosis of staphylococcic infection of the left forearm and forehead, with neurasthenia. The Wassermann reaction of the blood was negative. Coagulation time, bleeding time, clot retraction time and platelets have been repeatedly normal on different admissions to the hospital. Culture revealed anaerobic hemolytic streptococci, Streptococcus viridans and Staphylococcus albus.

DISCUSSION

Dr. Bertram Shaffer: I think the possibility that this condition may be a factitious eruption must be considered. All the lesions are on the left hand and arm. I cannot account for the pigmentation except that india ink or some other substance has been introduced into the skin.

Dr. Herman Beerman: I think Dr. Shaffer's diagnosis is the most likely, particularly in view of the embarrassment which the patient showed when I questioned her about certain things. I think there is a family conflict in this case. I do not know, however, why Dr. Shaffer stressed the point that the lesions are on the left hand; whether she is right handed or left handed, I think she would have enough power in either hand to pour a little acid on the opposite arm.

Dr. H. E. Twining: I observed this case about three months ago, and then the condition was suggestive of sporotrichosis. One lesion was on the arm, and there were several along the lymphatics of the left arm. Only one lesion had broken down. The picture at present is altogether different.

Dr. A. Strauss: I believe that the lesions may be accounted for by the fact that whatever was used there—and I venture to say it was lye—was rubbed in.

Dr. Thomas Butterworth, Reading, Pa.: According to the patient's story, the lesions begin as a purplish swelling which becomes necrotic and sloughs off.

Dr. Charlotte Backus Jordan, Stroudsburg, Pa.: All the lesions have been incised by the patient's physician.

Dr. H. E. Twining: These initial lesions are under the skin.

Dr. Charlotte Backus Jordan, Stroudsburg, Pa.: Yes, they develop under the skin, and incision produces relief.

Dr. Allen D. King, Wilmington, Del.: The patient is getting out of housework, and there are other reasons why she might want to cause these lesions.

Dr. Herman Beerman: This girl, her sister and their father are the only members of the family at home, and they live in a ten room house. She intimated that she has some fear of her father and that her sister is jealous of her. The dermatosis apparently is a means of getting sympathy.

DR. FRED D. WEIDMAN: There are not any active lesions tonight. This condition may be something of the order of scrofuloderma. If the lesions were occurring in a different distribution, one might think of Bacillus pyocyaneus infection. There is a quasilymphangitic distribution up the arm. I think there is a chance that the condition may be a deep tuberculous infection of the hypoderm. In any event, further complete laboratory study should be done.

DR. SIGMUND S. GREENBAUM: It seems to be the consensus that this condition is a dermatitis factitia. About a year and a half ago I met a neurologist who told me he would like me to observe an interesting case of periocular vicarious menstruation. I went to see the patient, and the effects of the "vicarious menstruation" in the form of what appeared to be a real purpura were seen around one eye. The patient told me that in a week or two the darkened areas around the affected eye would clear and new areas would develop around the other eye. She was in the hospital for about eight weeks. The then existing lesion disappeared completely, as she had said it would. Four days later the other eye became involved. I asked her if she ever had these lesions elsewhere. She said that she did, sometimes on the breast and arms. I said: "The next time you might get them on the arm, mightn't you?" She replied: "I don't know; I might." Two weeks later the original eye was again involved; the condition looked like a typical hemorrhage into the cutaneous and epidermal structure, but the skin of much of the area appeared as though a brush burn had taken place. I again suggested that perhaps a similar lesion would develop on the arm, and that is exactly where the next one "developed." The neurologist was then convinced that the lesions were self induced. I believe that the condition presented by this girl tonight is a dermatitis factitia. This patient is the same one I saw eighteen months ago for supposed "vicarious menstruation." She has found another way of injuring her skin. What the patient used when she had the hemorrhagic lesions around the eyes I cannot state; I think the effects produced were the result of thoroughly rubbing the involved area with a towel.

A Case for Diagnosis (Verruciform Dermatosis on a Hormonal Basis?).
Presented by DR. LOUIS GOLDSTEIN.

F. K., a white woman aged 30, complains of an eruption on her face which began with the onset of her menses at the age of 15. It started on her cheeks and gradually extended to involve the entire face. The progression was especially noted after each of her two pregnancies. The lesions also showed a tendency to turn darker during her menses. Itching has been slight and occasional. The forehead, eyelids, cheeks and chin present a great number of light brownish and reddish maculopapular lesions of various sizes with a tendency of some to confluence. A seborrhoea sicca of the scalp is noted, as well as an associated seborrheic dermatitis of the hair line in the postauricular regions. The Wassermann reaction of the blood was negative, and the blood count was normal. On biopsy nothing pathologic could be discovered with finality.

DISCUSSION

DR. MORRIS MARKOWITZ: The eruption looks like verruca plana.

DR. J. M. SCHILDKRAUT, Trenton, N. J.: I agree with that diagnosis.

DR. DOUGLASS A. DECKER, Allentown, Pa.: I think it is worth while to consider the possibility of epidermodysplasia verruciformis. That is not necessarily present at birth; it may develop later.

DR. SIGMUND GREENBAUM: The thought Dr. Decker just mentioned was in my mind. That would have to be excluded before classifying this case as one of verruca plana.

DR. LOUIS GOLDSTEIN: I considered that diagnosis too but was under the impression that epidermodysplasia verruciformis was present at birth. This con-

dition started at puberty and became more evident after the birth of each child. I think there is a definite hormonal factor.

DR. ISADORE ZUGERMAN: I observed this patient for some time and did not notice any changes before or after menstruation, although she gives that history. I gave her ten injections of estrogenic substance, 10,000 rat units per dose. It did not produce any change in the eruption.

A Case for Diagnosis (Mycosis Fungoides? Congenital Ichthyosiform Erythroderma?). Presented by DR. HERMAN BEERMAN and DR. LOUISE E. TAVS (by invitation).

F. C., a Negress aged 52, presents a generalized patchy erythematous scaling eruption. When the patient was 7 years of age an acute episode of chills, fever and coma occurred, at which time a generalized patchy red eruption appeared. The eruption has persisted. It has been increasingly progressive during the past two years, and hypertrophic plaques have developed. There are no subjective symptoms. The patient had a hysterectomy in 1925 for cancer of the cervix and a thyroidectomy in 1927. A complete blood count, determination of blood urea nitrogen, a van den Bergh test, fractional gastric analysis and all other laboratory studies gave normal results. Roentgenographic examination of the chest and of the sinuses showed no abnormalities. The patient has been given vitamin B complex, acetarsone, ichthammol and salicylic acid ointment, with no improvement.

DISCUSSION

DR. FRED D. WEIDMAN: Clinically I think there is too much infiltration for congenital ichthyosiform erythroderma; on the face the patch has elevated, salient margins. I do not think that the patient is particularly ichthyotic. I like to study difficult cases of this kind fully. So far as the sections are concerned, there is a psoriasiform reaction, but certainly this condition is not psoriasis. I should not venture a diagnosis without studying the case further.

DR. SIGMUND S. GREENBAUM: I presented this case in 1924 as one of congenital ichthyosiform erythroderma (ARCH. DERMAT. & SYPH. **11**:555 [April] 1925). At that time the lesions were scaly and red as they are now but thin and not infiltrated to the extent that they are now. It is for that reason that this case is extremely interesting. It would be unusual for mycosis fungoides to develop in such a condition. I do not recall such a change having been described. There never has been any itching. I think this condition is well worth photographing and presenting as an example of the later unusual changes in congenital ichthyosiform erythroderma.

DR. BERTRAM SHAFFER: I saw this patient several years ago, at which time she presented the picture just described by Dr. Greenbaum. None of the infiltrative changes were present. Mycosis fungoides has been described many times following parapsoriasis. It would be interesting if one could prove a similar connection between congenital ichthyosiform erythroderma and a subsequently developing mycosis fungoides.

BROOKLYN DERMATOLOGICAL SOCIETY

SEYMOUR H. SILVERS, M.D., *President*

MORRIS M. ESTRIN, M.D., *Secretary*

May 19, 1941

Folliculitis Decalvans. Presented by DR. L. M. FRUCHTBAUM.

S. B., a married woman aged 39, presented herself at the Long Island College Hospital for treatment of baldness of the scalp. Her present illness began at

about the age of 10 years. At the beginning a lesion developed on her left temple and spread to the right temple, involving the areas behind the ears and finally the eyelids and eyebrows. At present there is an extensive bald area, smooth in appearance, with pustular lesions at the periphery through which hair protrudes, extending over both temples, behind the ears and over the eyebrows and eyelids. The patient states that the pustules heal at times. The Wassermann reaction of the blood was negative. Examination by fluorescent light and the microscope revealed no fungi.

DISCUSSION

DR. C. T. CHIARAMONTE: From the history and the location of the lesions, I am inclined to disagree with the diagnosis. The patient states that she had rough follicular scaling previous to the appearance of the lesions. It is my impression that this condition is lupus erythematosus.

DR. D. M. DAVIDSON: In folliculitis decalvans the lesions are usually irregularly disseminated over the scalp. In this case the patches are symmetric and affect the hair line. The characteristic features, namely, folliculitis and atrophy, are present here. As in every case of this disease in which the condition is chronic, the follicular pustules and the redness about the hair follicles are present only at the border of the patches. I agree therefore with the diagnosis of folliculitis decalvans.

DR. A. W. GRACE: Since the question was raised, I examined the lesion for fungous infection and could not find any trace of this, either by culture or by direct smear. I felt that since the patient has been treated with a variety of remedies in the past without success, it might be well to treat her empirically for lupus erythematosus, and to that end she is receiving a bismuth or gold compound. She has not as yet received enough to make any impression one way or another.

DR. L. J. FRANK: I saw the patient recently. At that time she had alopecia and scarring. I noticed that most of the activity was around the border, that is, infected follicles and scaling, but I did not observe any lesions on the face or on other parts of the body. I made a tentative diagnosis of tinea but ruled this out by culture and microscopic examination. The only two possibilities left were lupus erythematosus and folliculitis decalvans. The first diagnosis was ruled out because the patches were not decidedly infiltrated. In this case, since the activity was at the border of the lesions and follicular pustules and scaling were present, I feel that the diagnosis is folliculitis decalvans.

DR. A. WALZER: The area about the left ear is atrophic as well as the skin on the ear itself. Folliculitis decalvans does not affect the ear, but lupus erythematosus does. I think that the border in which patent follicles are seen is just the progressive process of lupus erythematosus. It is difficult to conceive of folliculitis decalvans which would produce such large smooth areas of destruction and atrophy. I am inclined to accept this case as one of lupus erythematosus of the scalp and ear.

DR. L. M. FRUCHTBAUM: This type of lesion may be the result of any of five conditions: syphilis, favus, lupus erythematosus, pseudopelade and folliculitis decalvans. In syphilis, there would be a history of ulceration followed by fine scarring, which is not present here. In favus, one might see microscopically yellow cup-shaped scutula scattered throughout the scalp and fungi. In pseudopelade, there are areas of atrophy and loss of hair. In this case, there are depressions and protuberances, which are not present in lupus erythematosus as the pustules are pierced by hairs. Dr. Walzer has pointed out that the area over the left ear is involved. I do not agree that this is so. The area involved is behind the ear, on the posterior wall, but the ear anteriorly is not affected, and there is no atrophy.

Xanthoma Tuberosum. Presented by Dr. C. T. Chiaramonte.

F. M., a white man aged 37, of Polish-German extraction, slightly obese, presents a nodular eruption on the ears, back of the neck and extensor surfaces of the elbows. The nodules vary in size from 2 mm. in diameter to the size of a large chestnut. The largest lesions are on the elbows. All the lesions are pinkish with a decidedly yellowish cast. The larger lesions show superficial dilated capillaries. On the dorsal surface of the metacarpophalangeal and the phalangeal joints there are nodular lesions of the same type surrounded by a diffuse orange-yellow deposit. On the palms and on the volar surfaces of the wrists there are yellowish streaks which follow the natural folds of the skin. The volar surfaces of the fingers show miliary deep yellow deposits, some of which are decidedly hard and raised, and all seem to be arranged in band formation parallel with the long axis of the fingers. On the buttocks the nodules are present in great numbers and are of the same color; each nodule is flatly dome shaped and most of them are discrete. On the thighs the nodules have a circinate configuration. On the knees the nodules are profuse and arrange themselves in heaped-up clusters. At the base of the epiglottis there are five small shiny nodules of the same color as the surrounding mucous membrane.

The first lesions were noticed about six years ago on the elbows and knees as small white "pimples," which gradually grew in size and became pinkish and yellowish. During these six years the patient has apparently enjoyed good health and, regarding the lesions lightly, did not seek medical attention. The patient has always been fond of fats, especially butter and pork.

The following blood sugar values were obtained: fasting, 80 mg. per hundred cubic centimeters of blood; one-half hour, 133 mg.; one and one-half hours, 145 mg.; two and one-half hours, 100 mg., and three and one-half hours, 80 mg. The Wassermann reaction of the blood was negative. The clinical examination of the blood showed 20 mg. of urea per hundred cubic centimeters of blood. The direct van den Bergh reaction was negative. The icterus index was 3.5. The bilirubin amounted to 15 mg. per hundred cubic centimeters of blood. The combined cholesterol amounted to 175.4 mg. per hundred cubic centimeters, with 84 mg. of cholesterol esters. The lecithin content of the blood was 91.4 per hundred cubic centimeters.

Histologic examination of the lesion revealed large numbers of typical xanthoma cells in the cutis but no Touton cells.

DISCUSSION

Dr. A. Walzer: This patient does not have hypercholesteremia. As a matter of fact, this is not necessary in xanthoma. The important factor here is a disturbance in the relation of the lipoids rather than in the cholesterol itself. It has been frequently shown that the blood cholesterol may be normal but that there may be a decided increase in the other blood lipoids, thus producing a pronounced imbalance between all the lipoids in the circulation and thereby inducing a cholesterol deposit in the skin.

Dr. Jacob Skeer: It is probably a disturbance in the lipoid metabolism that causes these lipids to collect and form tumors. F. Schaff (*J. Invest. Dermat.* **1**:2, 1938) stated that patients with xanthoma have partially or entirely lost the capacity to regulate the concentration of emulsifying agents in the blood.

Dr. A. W. Grace: I was particularly interested in another aspect of this case. The patient has a feminine appearance; there is some restriction about the waist; there is fat around the hips, and he is not married at the age of 37. He did not have hair on his upper lip. I am wondering—apart from the xanthomatous condition—whether testosterone propionate would not help in some aspects. This is just a suggestion and has nothing to do with xanthoma, but it is certainly just as good as some of the empiric therapy tried in the past, and it may give him a better social outlook on life.

DR. C. T. CHIARAMONTE: I should like to emphasize the dietary history of this patient. Before the lesions appeared the patient indulged heavily in fats; he ate enormous amounts of butter, pork, cream and anything greasy. When he was given a fat-free diet, the lesions did not clear up, but their progress seemed to be arrested and no new lesions appeared.

Keratosis Follicularis (Darier). Presented by DR. L. M. FRUCHTBAUM.

S. L., a man aged 21, came to the Unity Hospital with lesions on his trunk of six months' duration. The lesions first appeared on the upper part of the chest, spread to the upper part of the back and finally to the right axilla. There is no itching. There are numerous papular lesions with uneven tops, varying in size from that of a millet seed to that of a pea. Some are discrete and others are fused into plaques. The color of the lesions varies, some being yellowish and others reddish. The lesions are distributed over the upper part of the back, with the spine acting as the center, and spread out to the shoulder blades and to the areas above and below both clavicles. There are a few discrete papules in the right axilla. The Wassermann reaction of the blood was negative.

DISCUSSION

DR. H. L. FEIGENBAUM: I agree that this case is a typical one of Darier's disease. The keratosis around the follicles and the peculiar brownish discoloration favor this diagnosis. The onset is a little later in life than usual, but the location of the eruption is typical.

DR. LOUIS CHARGIN: I think this case is a typical one of Darier's disease, but of a mild variety. I have now treated 10 patients at Mount Sinai Hospital with vitamin A, with remarkable improvement. Apparently this condition is a vitamin A disturbance in the sense that these patients cannot convert the provitamin, namely, the carotene, into vitamin, although the amount of carotene in the blood is normal. The other possibility is that the vitamin A is not absorbed properly in the gastrointestinal tract. Our patients have done so well with vitamin A therapy that I suggest that all patients with Darier's disease be given this form of therapy. I have given 20,000 U. S. P. units three times a day for ten days. It is not impossible that this is a remedy for the milder types of Darier's disease. Vitamin A may be given by injection or by mouth; one gets good results either way. Hydrochloric acid need not be given.

DR. E. A. GAUVAIN: I understand that this condition has been called vitamin A deficiency. If keratotic follicular lesions with night blindness are due to vitamin A deficiency and Darier's disease may be due to the same cause, then what is the explanation of the congenital condition? Darier's disease has been accepted as a congenital disease, whereas follicular lesions and night blindness are not congenital and have been proved to be dietary in origin. If a mother and child have the disease, might they both get it because of dietary conditions?

DR. LOUIS CHARGIN: Follicular keratosis as seen in children is not in any way related to Darier's disease. They are both dyskeratoses; both have a relation to vitamin A, but that does not mean that they are the same thing.

DR. L. M. FRUCHTBAUM: There is no evidence of familial history in this case.

Prurigo Mitis. Presented by DR. ABRAHAM WALZER.

J. L., a boy aged 10 years, is presented from the dermatologic clinic of the Brooklyn Jewish Hospital. There was a history of asthma in a maternal uncle, but the patient had no history of allergy. He was vaccinated at the age of 9 months and had measles at 18 months and mumps at 9 years. At the age of 5 years he had rheumatic fever for eighteen weeks.

The present eruption began when he was 6 weeks old. With the exception of the time he had the rheumatic fever, the rash has been persistent since then. He is somewhat better in the summer.

The eruption involves the trunk, extremities, neck, forehead and scalp. The elementary lesion is a millet seed–sized papule which is intensely pruritic. Many of the papules are moist and bleeding, and others are surmounted by bloody crusts. Intermingled with these lesions are many pigmented macules and white scars, which are the remnants of these papules. Some areas of skin, especially on the extremities, are lichenified. The inguinal, axillary and cervical glands are enlarged. The general health of the patient is below par, as is evidenced by underweight and anemia.

DISCUSSION

DR. ABRAHAM WALZER: The relation of prurigomitis and papular urticaria to allergy was reported by Dr. Max Grolnick and myself (The Relation of Papular Urticaria and Prurigo Mitis to Allergy, *J. Allergy* **5**:3, 1934). We found that in approximately 50 per cent of these cases there was a family or personal history of atopy. About half of these cases (25 per cent of the whole series) were the only ones in which positive reactions to one or more atopens were elicited. An increased eosinophil count was found only in cases in which there was a history of atopy; it was, therefore, not the result of papular urticaria. Attempts at specific therapy, as suggested by the positive reactions to tests, were of no value. Papular urticaria and prurigo mitis are probably atopic diseases but not allergic ones.

Progressive Pigmentary Dermatosis. Presented by DR. E. A. GAUVAIN.

S. G., a white man aged 73, complained of itching and a rash on the lower extremities of two years' duration. The eruption started on the calves of the legs and spread to the thighs. He used ointments and calamine lotion without relief. He has asthma of twenty-five years' duration, and the attacks became worse with the onset of the eruption.

On both legs and thighs there are irregular patches of pigmentation, telangiectases and petechiae.

DISCUSSION

DR. MOSES SILVERMAN: I think the condition in this case is Schamberg's disease. However, on the lower part of the ankle I saw eczematous lichenoid patches; I wondered about their origin, because in Schamberg's disease the lesions progress slowly and without any changes except pigmentation.

DR. JACOB SKEER: I saw this man about six months ago at the Brooklyn Jewish Hospital, at which time he presented the same condition except that he complained of itching and there was a lichenified eruption on the ankles. I did not have a chance to study his case because he did not return after the first visit, but at that time the various pigmentary disturbances were discussed. As I remember it, he had the eruption a few months at that time; so it could not be of more than one year's duration. I question whether Schamberg's disease could spread so quickly.

DR. LOUIS CHARGIN: I think the case is one of dermatitis hypostatica. This man has a disturbance of the circulation of the legs in the venous system. The eruption is an eczema due to varicose veins. This condition is seen particularly in women, but it occurs also in men as a result of poor circulation in the legs. Schamberg's progressive pigmentation of the skin is supposed to start with spots which spread peripherally, and as these disappear they leave dark brownish pigmentation. I should call this patient's condition dermatitis hypostatica or varicose vein complex with pigmentation.

DR. L. FRUCHTBAUM: This patient definitely complained of severe itching. There is no itching in Schamberg's disease, nor are there any scales or crusts,

but there is a smooth surface with peppery spots and changes in pigment. In this case there are many erythematous plaques covered with crusts and scales, especially around the ankle. It is a typical case of eczema of the lower extremities.

DR. E. A. GAUVAIN: I cannot agree with the preceding speakers. I admit that one need not see varicose veins to diagnose varicose eczema. But this patient is a thin-legged person with no evidence of edema or inflammatory reaction in the skin, which I think is a necessary concomitant of varicose eczema. In the cases of dermatitis hypostatica I have encountered the eruption has progressed up to the knee but not to the groin, as in this case—a distribution characteristic of Schamberg's disease. The patient has a dermatitis on the ankle, but this may be due to an irritation from a shoe. Nine tenths of the lesions in this man show no evidence of eczema of any type. The skin is smooth, and there are areas of clear skin with brown peppery spots between.

Naevus Unius Lateris and Recklinghausen's Disease. Presented by DR. SEYMOUR H. SILVERS.

M. W., a white school girl aged 12 years, complains of an eruption on the right forearm. The patient and her mother were uncertain of the length of time the eruption had been present.

Examination shows a well developed mentally alert girl. Extending from the right wrist to the elbow, mostly on the flexor surface, is a bandlike well defined eruption 1½ inches (4 cm.) in width. It is somewhat lighter in color than the surrounding skin and consists of pinpoint-sized to pinhead-sized keratotic papules. Scattered over the body are numerous pigmented well defined macules of various size and shape. There are also numerous pinhead-sized to pea-sized, red, violaceous, noninflammatory, dome-shaped papules which are soft and give the impression of herniation at the base.

On questioning, the mother stated that the father, now dead, had had "moles" which were similar to those shown by the patient. Two older sisters, aged 13 and 15, showed macular, pigmented areas on the trunk and a few pinhead-sized to lentil-sized moles. Both are physically and mentally normal.

DISCUSSION

DR. JACOB SKEER: I think this condition is Recklinghausen's disease. The only thing that is not clear to me is the naevus unius lateris.

DR. S. H. SILVERS: It may be argued that Recklinghausen's is a nevus in the broad sense, but I have never seen a similar nevus-like lesion in a case of this disease.

Parapsoriasis (Pityriasis Lichenoides Chronica). Presented by DR. C. T. CHIARAMONTE.

C. N., a woman aged 25, born in this country, presents a generalized eruption which began thirty months ago. The lesions appeared on the arms and gradually spread to involve all parts of the body. The lesions are well defined papules, some of which appear excoriated and some are covered by psoriasiform scales. There is a definite depigmentation in the areas which were formerly sites of papules, and in the intervening areas there is hyperpigmentation, in places suggesting poikiloderma. The past history is irrelevant except for the eruption. The Wassermann reaction of the blood was negative.

DISCUSSION

DR. D. M. DAVIDSON: I should like to hear from any one who has had more experience with this type of parapsoriasis whether the urticarial lesions, which in this case are scattered among the papules, are a usual observation.

DR. L. J. FRANK: I am inclined to agree with the diagnosis. There are many small scaly papules resembling psoriasis, while others look like lichen planus; the chronicity of the disease, together with the fact that the lesions are scattered all over the body, would be sufficient to make the diagnosis of parapsoriasis.

DR. LOUIS CHARGIN: I agree with the diagnosis as presented. I think the condition is a typical example of parapsoriasis, with a psoriasiform type of lesion. Dr. Chiaramonte brought out an interesting point, that of the leukoderma following the disappearance of the lesions. Another thing which interested me was the crusted lesions, and the question arose in my mind whether this condition was not parapsoriasis with varioliform lesions.

DR. C. T. CHIARAMONTE: This condition is of long standing, and this fact plus the presence of pigmented and depigmented areas and the absence of vesicles made me feel that the patient did not have the acute lichenoid and varioliform type of parapsoriasis.

ADDENDUM TO PAGE 1121

A Case for Diagnosis (Senear-Usher Syndrome? Pemphigus?). Presented by DR. JACK WOLF.

G. G. registered at the Skin and Cancer Unit of the New York Post-Graduate Medical School and Hospital on Oct. 19, 1940, presenting generalized lesions of two and one-half years' duration. She had phlebitis of the left leg following childbirth. The patient is 5 feet and ½ inch (154 cm.) in height and weighs 128 pounds (58 Kg.). She is very nervous but otherwise is in fairly good health. There has been no appreciable loss of weight and no history of intake of any drug except tablets of vitamin B complex lately. For the past few days she has been complaining of a peppery feeling in the mouth.

Two and one-half years ago, four weeks before delivery, she became extremely nervous. The area around the umbilicus became very itchy, and bullous lesions appeared. A week later the entire hypogastric area became covered with yellowish crusts. She was treated with topical remedies and ultraviolet rays. The area healed soon after delivery of the child, and she remained free from any lesions for one and one-half years. A year ago, after another nervous disturbance, similar bullae appeared on the flush areas of the face and nose, and six weeks later some appeared on the shoulders and then on the sides of the thighs, on the legs and in the hypogastric regions. The original rash was very pruritic; the present eruption, while similar, is very slightly itchy. Two to three bullae appear at a time but in greater numbers when she is distressed and also during the summer. At present fresh vesicles and bullae are seen in the lumbosacral and umbilical regions. They are flaccid, arising from a normal integument.

On the face, breasts, back, abdomen and thighs are fairly symmetrically distributed, discrete bullae. There are also scaly crusted patches and light to dark brown, dull and shiny superficial scars. There are no lesions on the mucous membranes. All of the lesions except a few are ruptured, exposing thin, shriveled epidermis which partially covers the denuded, dry, erythematous surfaces.

The results of routine laboratory examinations were normal.

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